DOCUMENT RESUME

ED 112 737 HE 006 707

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TITLE	Undergraduate Curriculum Patterns: A Survey of Baccalaureate Programs in Selected Fields, 1962-63. Bulletin 1965, No. 19.
INSTITUTION	Office of Education (DHEW), Washington, D.C.
REPORT NO	OE-56021
PUB DATE	65
NOTE	98p.
AVAILABLE FROM	Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. 20402 (Catalog No. FS5.256:56021, $0.35)
EDRS PRICE	MF-$0.76 HC-$4.43 Plus Postage
DESCRIPTORS	Area Studies; *Bachelors Degrees; College Curriculum; Courses; *Curriculum; Curriculum Design; Curriculum Development; Curriculum Guides; Curriculum Planning; *Curriculum Research; Departments; Educational Research; *Higher Education; Institutional Research; *Intellectual Disciplines; Mathematics Curriculum; Questionnaires; Science Curriculum; Units of Study (Subject Fields)

ABSTRACT

There is great diversity among institutions of higher education in their requirements for various curriculums. This report, which is concerned only with the broad requirements as percentages of total requirements, analyzes the Bachelor of Arts and Bachelor of Science curriculums in six undergraduate areas that account for about one-half of all degrees awarded at the bachelor's and first-professional level: humanities, social sciences, physical sciences and mathematics, biological sciences, engineering, and agriculture. Only summary findings in each area are presented. Curriculums designed specifically for teacher preparation are excluded from this study. Data was gathered by specialists in each field by means of questionnaires. The report details the results of questionnaires on 16 curriculums for which data were received from 15 or more institutions. (Author/JMF)

OE-56021
Bulletin 1965, No. 19

UNDERGRADUATE CURRICULUM PATTERNS:

A Survey of Baccalaureate Programs in Selected Fields

1962-63

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FOREWORD

There is great diversity among institutions of higher education in their requirements for various curriculums. While it is possible to find from a college bulletin what a specific curriculum at a particular institution is, information about requirements on a national basis has been lacking. For this reason, eight Office of Education specialists undertook in 1962 a coordinated study of undergraduate curriculum patterns in the United States for the academic year 1962-63. Two of the original eight, Edwin L. Miller, Specialist for Biological Sciences, and Donald F. Warner, Specialist for Social Sciences, resigned to accept other positions before the study was completed and were replaced by Thomas E. Furman and James Buhl Shahan.

This report, which is concerned only with the broad requirements as percentages of total requirements and not with details of specific course requirements, analyzes the Bachelor of Arts and Bachelor of Science curriculums in six undergraduate areas that account for about one-half of all degrees awarded at the bachelor's and first-professional level: humanities, social sciences, physical sciences and mathematics, biological sciences, engineering, and agriculture. Only summary findings in each area are presented. Curriculums designed specifically for teacher preparation are excluded from this study.

The report is expected to be helpful to professional educators, particularly those responsible for curriculum development in institutions of higher education.

RALPH C. M. FLYNT
Associate Commissioner for Educational Research and Development

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Chapter I

HISTORY AND METHODOLOGY OF THE SURVEY

This study grew out of a desire by several specialists in the Higher Education Programs Branch of the Office of Education to examine the curriculum patterns in their fields of specialty. They agreed upon a coordinated study of curriculum requirements designed to collect data previously unavailable for each separate field and to draw meaningful comparisons among different fields.

Only baccalaureate programs were studied, and only broad discipline, or field, requirements were investigated. Hence, the findings give only the broad configurations of curriculum requirements in the various disciplines studied. Since a credit requirement implies a minimum number of credits, the data in this report clearly represent minimums only; students may actually take more credits in a given area, since they may use their free electives in any manner they wish. For example, although an institution may require a student majoring in chemistry to take a minimum of 10 credits in social sciences, the student may choose to use some of his free electives to take an additional 5 credits in social sciences.

Scope of the Study

One of the early problems faced was that of determining the disciplines to be included in the survey. The staff decided that the emphasis would be on the basic disciplines in the typical arts and sciences degree program and on selected professional areas. The tabulation below, taken from *Earned Degrees Conferred*, 1958–59, shows eight major areas of study and, of all bachelor's degrees conferred in all areas, the percentage accounted for by each of these areas during the 12-month period ending June 30, 1959:

Agriculture	1.4%
Biological Sciences	3.9%
Business and Commerce	13.8%
Engineering	9.9%
Humanities	13.0%

Physical Sciences and Mathematics	6.4%
Social Sciences	12.9%
Teacher Education	22.8%
Total	84.1%

From these tentative areas, the staff chose six to be covered in the survey. Within these areas, representative disciplines were selected for study:

Areas	*Disciplines, or Curriculums*
Humanities	English, Speech and Drama, Spanish
Social Sciences	History, Political Science, Sociology
Physical Sciences and Mathematics	Chemistry, Physics, Mathematics
Biological Sciences	General Biology, Botany, Zoology
Engineering	18 different engineering fields
Agriculture	83 different agricultural curriculums

Structuring the Sample

From the inception of the study, it was intended that data would be collected by the specialist in each field from an appropriately defined sample. Preliminary examination revealed that circumstances differed considerably between the professional fields and the liberal arts fields. For example, whereas many highly specialized agriculture and engineering curriculums are offered in a relatively small number of institutions, the converse is true in the more general arts and science disciplines, such as English, history, and chemistry.

Accordingly, H. H. Armsby and H. S. Brunner developed unique samples and questionnaires for engineering and agriculture, respectively, areas in which they serve as specialists. In the liberal arts fields, all specialists used the same strata, or groupings, so far as department size (as measured by the number of degrees conferred) was concerned. The arts and science sampling ratios were determined for each field in which the number of departments concerned was substantially larger than 200.

Sample of Engineering Curriculums

There were 242 institutions which conferred engineering degrees during the year ending June 30, 1960, as reported in *Engineering*

Enrollments and Degrees—1960.[1] These institutions offered 1,209 engineering curriculums in fields recognized at that time for accreditation by the Engineers' Council for Professional Development (ECPD), plus an unknown number (not large) of curriculums in miscellaneous fields not accredited by ECPD. The number of institutions offering curriculums in the different recognized fields varied from 1 to 143.

It was decided to exclude curriculums in fields of engineering not accredited by the ECPD, a decision that automatically reduced the number of fields by approximately one-half. For each remaining field, the total number of curriculums (accredited *and* otherwise[2]) was determined. If this total was less than 10, the field was excluded. This reduced the total number of fields to 18. Then, for each of these 18 fields, the curriculums were divided into 2 groups, accredited and unaccredited, yielding 36 separate groups of curriculums at this stage, some of which had fewer than 10 curriculums.

Finally, for *each* of these 36 groups, a sample was drawn as follows: (a) if the number of curriculums in the group was 10 or less, all curriculums were studied; (b) if the number was more than 10 but no greater than 50, 10 curriculums were selected; and (c) if the number was greater than 50, 20 percent were selected. The selections in (b) and (c) were randomized to the extent permitted by the following additional constraints: no institution was to be asked to report on more than 5 curriculums, and every institution was to be asked to report on at least 1 curriculum (unless the only curriculums offered were in fields excluded from the study). Nine institutions were excluded from the study because none of their curriculums were among those included in the survey.

The sample thus constructed included 233 accredited curriculums, or 29 percent of all accredited curriculums in the 18 fields, and 161 unaccredited curriculums, or 39 percent of all unaccredited curriculums in these same fields. The total sample consisted of 394 curriculums, or 32 percent of all engineering curriculums in the 233 institutions.

[1] Tolliver, Wayne E., *and* Armsby, Henry H. U S Department of Health, Education, and Welfare, Office of Education. *Engineering Enrollments and Degrees—1960* (Circular No. 638). Washington: U.S. Government Printing Office. 1960. 44 p.

[2] Accreditation in engineering applies to specific curriculums, not to an institution as a whole. It is not only possible, but fairly common, for a given institution to have some of its engineering curriculums accredited and others unaccredited. Accreditation of engineering programs cannot be sought by an institution until it has previously been accredited *as an institution* by the appropriate regional accrediting agency or association.

Sample of Agriculture Curriculums

An earlier study of enrollment and degrees granted in agriculture[3] provided a list of 130 institutions offering baccalaureate degree programs in agriculture. These institutions, 67 of which were land-grant and 63 were non-land-grant institutions, constituted the universe of inquiry for this study of curriculum patterns.

Because of differing practices in naming curriculums in the different institutions, the count showed altogether 83 differently designated baccalaureate degree curriculums offered at the 130 institutions. Taking each of these 83 curriculums offered in any one of the 130 institutions as an "offering," the collective count for the 130 institutions showed 956 offerings to be sampled.

The sample design provided for stratification of offerings in the land-grant institutions by region and by curriculum. The names of the institutions were arranged alphabetically in each region-curriculum cell. From each region-curriculum cell a 50 percent sample of the institutions was selected. Using random starts, there were selected from each cell the institutions represented by the random start for that cell and every other one thereafter. Because some institutions offer a sizable number of agricultural curriculums, the number of questionnaires sent to any given sample institution varied from 1 to 8. A comparatively few curriculums were offered by only one or two institutions. These were sampled with certainty. This procedure resulted in a sample population of 419 offerings from among the 83 differently designated curriculums in the 67 land-grant institutions.

For the 61 non-land-grant colleges reporting, all offerings in all the institutions were used, because there were only a few institutions in the group offering more than one or two curriculums. This non-land-grant group added 197 offerings.

The total number of questionnaires mailed out was, therefore, 616, to gather data on 83 different curriculums being offered in 128 institutions. The tables in this report treat only those 16 curriculums for which data were received from 15 or more institutions.

Sampling Procedures Used in the General Arts and Sciences

Sampling procedures different from those used in either agriculture or engineering were employed in the general arts and

[3] Henry S Brunner, U S. Department of Health, Education, and Welfare. Office of Education *Enrollment and Degrees in Agriculture—Institutions of Higher Education, September 1960* (OE-56006). Washington: U.S. Government Printing Office, 1961. 70 p.

TABLE 1. — Number of liberal arts colleges conferring specified numbers of degrees and number of institutions sampled, by field: Aggregate United States, 1959–60

Discipline or field of study	Number of liberal arts colleges conferring				Number of institutions included in sample		Total
	degrees 1 to 9	10 to 24 degrees	25 or more degrees	Total	Liberal arts colleges	Universities	
1	2	3	4	5	6	7	8
Biological sciences							
Biology	415[b]	146[d]	23	584	200	64	264
Botany	28	1	0	29	29	75	104
Zoology	[illegible]	17	2	61	61	78	139
Humanities							
English	328[b]	270[b]	98[d]	696	193	74	267
Spanish	276[d]	2	1	279	141	75	216
Speech and drama	246[d]	35	7	288	166	75	241
Social sciences							
History	340[a]	209[b]	74	623	195	87	282
Political science	202[d]	69	20	291	190	77	267
Sociology	338[c]	119[d]	19	476	192	78	270
Physical sciences							
Chemistry	446[a]	90	14	550	197	74	271
Mathematics	456[b]	146[d]	18	620	205	74	279
Physics	275[d]	47	6	328	191	73	264

Note [a] indicates a sampling ratio of approximately 1 to 5.
[b] indicates a sampling ratio of 1 to 4.
[c] indicates sampling ratio of 1 to 3.
[d] indicates a sampling ratio of 1 to 2
All other cells sampled with certainty.

sciences.[4] Not only were there fewer highly specialized curriculums in these areas, but the number of institutions offering degree programs in these disciplines were more numerous. Consequently, the number of institutions in the general arts and science samples is larger than the number in either agriculture or engineering.

The number of liberal arts colleges which conferred bachelor's degrees in 1959-60 in the selected arts and science majors varied widely — from 29 in botany to 688 in English. To achieve an adequate and reasonably consistent sample, the research staff decided to select, for each major field about 200 of the liberal arts colleges

[4] This category consists of history, sociology, political science, general biology, botany, zoology, mathematics, chemistry, physics, English, Spanish, and speech and drama.

offering degrees in that field. For botany and zoology, fields in which fewer than 200 colleges conferred degrees, all the colleges were taken in the sample. For each major field, approximately half the universities in the United States were included.

Using degree data in *Earned Degrees Conferred, 1959-60*, a publication of the Office of Education,[1] institutions were divided into three categories for each major field: those conferring 25 or more degrees in the selected field in 1959-60; those conferring 10 to 24 degrees; and those conferring 1 to 9 degrees. Table 1 shows the sampling ratios used for each category for each field. For all arts and science fields except botany and zoology, the findings are somewhat more representative of larger than smaller departments, since the samples included a higher proportion of the larger departments.

Systematic sampling with random starts was used in selecting the institutions for each major field. Because the selection of institutions for each major field was done independently of the other fields, it is possible for a specific institution to appear in the samples for several fields. Table 1 shows the total number of liberal arts colleges which awarded 1 or more degrees during the period July 1, 1959, to June 30, 1960, in each of the fields and the total number of institutions selected in each sample according to the procedures described.

Design of the Questionnaires and Response Rate

Although some of the desired information could have been found in catalogs, much of it is subject to different interpretations. Furthermore, it would have been tedious to obtain several items of information from the catalogs — for example, changes in requirements, electives, associate degrees, and related programs. Hence, the survey staff decided that it would be simpler to obtain the data in a structured form that would ensure comparability — in short, by a questionnaire.

It was felt that the questionnaires should be as nearly uniform as possible. Prototype questionnaires were prepared for agriculture and engineering. These forms were then analyzed by the full survey staff and, wherever possible, the same content and format were used to make the instrument universally applicable to all disciplines. A common "Definition of Terms" was placed on each

[1] Tolliver, Wayne E. U S Department of Health, Education, and Welfare, Office of Education *Earned Degrees Conferred—1959-60* (Circular No. 687). Washington: U S. Government Printing Office. 1962 207 p

questionnaire form. Finally, it was agreed that the general format of the tentative questionnaire for engineering could be used by all the specialists, with modifications in details to fit specific disciplines. Copies of three questionnaires are included in the Appendix, namely for agriculture, engineering, and the natural sciences.

Since different degrees are awarded in the arts and sciences, each of the questionnaires for these disciplines contained a column for a Bachelor of Arts (B.A.) curriculum, a Bachelor of Science (B.S.) curriculum, and a teacher-preparatory curriculum.

For each of the disciplines and fields listed on each questionnaire, a space was provided for the respondent to write the number of credits required in the curriculum under consideration. Depending on the institution, these credits might represent semester-hours, quarter-hours, trimester-hours, or course units.

TABLE 2. — Response rate, by discipline

Discipline or field	No. of questionnaires mailed	No. of questionnaires returned	Response rate (%)[1]	No. of usable responses[2]	Percent of usable returns[3]
1	2	3	4	5	6
Agriculture	616	570	92%	570	100%
Biological sciences					
Biology	264	248	94	205	83
Botany	104	100	96	68	68
Zoology	139	138	99	97	70
Engineering	396	365	92	316	87
Humanities					
English	267	256	96	254	99
Spanish	216	185	85	159	86
Speech and drama	241	211	87	178	84
Physical sciences					
Chemistry	271	263	97	261	99
Mathematics	279	266	95	250	94
Physics	264	251	95	246	98
Social sciences					
History	282	271	96	249	92
Political science	267	248	93	222	90
Sociology	270	258	95	233	90

[1] Column 3 divided by column 2

During the editing process a few questionnaires in each discipline were returned to the respondent for further clarification, some were never returned, indicating that the institution could not or did not wish to supply the data. In other cases, notably the biological sciences, questionnaires were returned with the notation that the institution did not offer a major in the field in question, a consequence of random selection of universities, some of which did not offer majors in the fields being surveyed

[2] Column 5 divided by column 3.

Each specialist pretested his questionnaire to improve its validity and understandability. Questionnaires were addressed to deans or departmental chairmen at each institution included in the sample. Followup was accomplished by letter and telegram. The response rate was unusually high in all fields, ranging from 85 to 99 percent. There was also a high percentage of usable returns (see table 2.)

Validating and Editing Techniques

Before the staff began the analysis of the data, they checked each return for errors and omissions. Validating and editing techniques used by the various specialists were quite uniform. If any item appearing on the questionnaire was not readily understandable, the researcher turned to the institution's current catalog, which usually gave additional information on the subject. The catalogs were helpful in defining the "credit unit," in describing the instructional calendar, in elaborating on degree requirements, and in delineating course titles and content. Cross-reference checks of college catalogs resolved most of the doubts about proper interpretation of the data.

Occasionally, it was necessary to communicate with respondents to learn the full meaning of the data. In perhaps 5 percent of the cases, questionnaires had to be returned for further clarification before the data were usable.

Wherever practical, specialists checked the data for their respective areas of subject matter by direct contact with deans and departmental chairman. Such spot checks not only substantiated the appropriate interpretation of specific degree programs, but also provided information about common patterns and problems recurring throughout the study and increased staff confidence in the data.

The final step in validating and editing was to check the credit units reported for each subdivision of the degree program cell by cell. Where curriculums did not specify an exact credit-unit requirement, but rather, minimal ranges, it became necessary to agree upon "typical student patterns" in such areas. In such cases, all specialists consistently used the midpoint in the range. For example, if the range in mathematics was 16 to 24 credits, the figure 20 was used in computing the mathematics requirement. A similar procedure was used when one or more of several fields could be used to satisfy a requirement. If, for example, 12 credits

were required in natural science, with the option of satisfying the requirement by taking all 12 credits in the biological sciences, or all 12 in the physical sciences, or dividing the 12 between them, then 6 credits were allocated to biological and 6 to physical sciences.

When the respondent indicated a "total" only for a category that has several subdivisions and footnoted the entry to indicate that individual students divide the total among the subdivisions, the item was resolved by dividing the total equally among the subdivisions; thus, a total of "20" credits in the "social sciences," which needed to be further subdivided into "basic" and "applied," was tabulated as 10 basic and 10 applied. The rationale behind the assumption is that the transcript records of 100 students would average "10" and "10." However, specialists were encouraged to rely on their own judgment when breaking down a particular curriculum if experience indicated a "50-50" split to be unlikely. The basic guide in making such adjustments was the total number of credits reported necessary for graduation. In cases where discrepancies could not be reconciled by correspondence or reference to the official catalog, the specialist telephoned the respondent.

Before an edited questionnaire was judged eligible for inclusion in the study, a final calculation was made to see that the sum of the parts agreed with the total number of credit units established for the curriculum. This total number of credit units was, of course, equal to the sum of the credits in required courses and of free elective credits.

Plan for Analysis of the Data

As anticipated, the returns revealed great variation in the type of credit unit and the total number of credit units required for graduation. These variations were generally characteristic of entire institutions rather than of particular curriculums within individual institutions. The Spanish and speech and drama curriculums have been arbitrarily chosen to illustrate these variations (see table 3), which occur in quite similar patterns among all the curriculums surveyed.

The semester-hour is by far the most common unit of the six different units in use among the institutions surveyed. In Spanish, 81 percent of the B.A. and B.S. curriculums used the semester-hour as the credit unit, and in speech and drama, 84 percent. A much smaller number of curriculums used the quarter-hour as a

TABLE 3. — Number of curriculums and number of credits required for graduation with a major in Spanish or Speech and Drama, by type of course credit: Aggregate United States, 1962-63

Curriculum	Value symbol*	Type of credit unit					
		Credit-hour units			Course units		
		Semester-hours	Quarter-hours	Trimester-hours	Year course	Semester course	Quarter course
1	2	3	4	5	6	7	8
Spanish, B.S.		(8)	(3)	(0)	(0)	(1)	(0)
	H	140	199				
	D9	140	199				
	D5	124	192		...	32	....
	D1	120	180		..		
	L	120	180				
Spanish, B.A.		(128)	(15)	(1)	(3)	(5)	(4)
	H	139	192	123	18	40	48
	D9	132	192		...		
	D5	125	185		16	36	37
	D1	185			....		
	L	120	180		16	32	36
Speech and drama, B.S.		(22)	(5)		...	....	
	H	136	204		.		
	D9	130	204		....		
	D5	125	185		.. .		
	D1	120	180	..	....		....
	L	120	180				
Speech and drama, B.A.		(147)	(22)	(1)		(2)	(2)
	H	141	204	124	..	40	37
	D9	130	192				
	D5	124	192		....		
	D1	120	180		....		
	L	120	180		..	32	25

*Symbols: H = the highest percentage value shown in the array.
D9 = the value that best represents the level above which approximately 10 percent of the total number of curriculums fall.
D5 = the value that best represents the midpoint in the array.
D1 = the value that best represents the level below which approximately 10 percent of the total number of curriculums fall.
L = the lowest percentage value shown in the array.

(Note. Figures in parentheses are the numbers of curriculums of the type specified in column 1 using types of credit units specified in columns 3 through 8 respectively.)

credit unit: 11 percent in Spanish and 13 percent in speech and drama.

In a small number of curriculums (8 percent in Spanish and 3 percent in speech and drama), "courses" were the credit units in use, and three distinct varieties were reported: the year course, the semester course, and the quarter course. The trimester-hour

was the rarest credit unit in use, despite recent interest in it as a means of achieving year-round academic calendars; only two curriculums reported using it.

Great variation was also found in the total requirements for degrees. For example, total semester-hour requirements ranged from 120 to 141, and quarter-hour requirements from 180 to 204. Variations among curriculums using the year course, semester course, and quarter course as credit units were even greater, but the numbers of cases were not large enough for these or for trimester-hour curriculums to permit significant comparisons. For each credit unit, the number of cases and the distribution by curriculum are shown in table 3. The total requirements for a given degree and major vary by 10 to 50 percent for the 6 different credit units reported.

Because of this typical diversity among all the curriculums studied, it was necessary, before the data could be tabulated for the specialists to agree upon common procedures and symbols. It was decided that comparability could best be achieved by converting the credit units reported to percentages of the total graduation requirement. For each category being tabulated, the mean or arithmetic average (M) of all percents in the category was obtained to the nearest integer. Then, other values relating to variation were obtained: L, D_1, D_5, D_9, and H.[6] L and H are the high and low values, respectively. D_1 and D_9 are approximately the first and ninth deciles, between which lie about 80 percent of the numbers of the array. D_5 represents approximately the fifth decile, or median, of the array.

Each specialist employs M, L, D_1, D_5, D_9, and H in his report in one of the following chapters. In the cells of the various tables, M appears in the upper left corner, the other values for each category being arranged diagonally, in ordered form, from L in the lower left corner to H in the upper right. Thus, the reader can see at a glance the mean value, the median value, the high and low values, and the approximate range of values of the middle 80 percent. It must be remembered that reporting or computa-

[6] Let N denote the number of percents in a category. The N percents were then arrayed in descending order, from H to L, and the values D_1, D_5, and D_9, for the category were determined as follows. A new integer (n) was obtained by rounding the ratio (N/10) to the nearest integer, rounding up the ratio if N was an odd multiple of 5. D_1 was obtained by beginning with the lowest value (L) in the ordered array, counting up a total of n cases, and rounding the value thus obtained to the nearest integer. D_9 was obtained by an identical procedure beginning with the highest value (H) in the ordered array and counting down n cases; D_5 was obtained by selecting and rounding to the nearest integer, the middle value in the ordered array if N was an odd number, or if N was even, by selecting the lowest value of the upper half of the array.

tional errors can occur in any statistical survey and that when they do, they are reflected disproportionately in the extreme values. Therefore, less reliance should be placed on the extreme values — H and L — than on D_1 and D_9 as measures of variability.

Only the means (M) can be added horizontally with any significance. A zero for L in a category means that at least one institution had no requirement for the field of study represented by that column. A zero also for D_1 means that at least 10 percent of the institutions had no requirement. A zero for D_5 or D_9 has a comparable meaning.

The tabulations in this publication are confined to B.A. and B.S. curriculums. Reasonable effort has been made to achieve as much uniformity as possible. As was expected, certain circumstances dictated individualized treatment of data. In each such instance, the author has attempted to alert the reader, to justify the departure, and to describe his procedure clearly.

Chapter II

AGRICULTURE

by

Henry S. Brunner[1]

Readers, particularly those who responded to the questionnaire on agriculture for this survey, will note that the data presented in this chapter represent only a comparatively few of the curriculums originally listed and currently offered. The institutions which reported degrees granted for any agricultural curriculum and the curriculum designations they used when this Office conducted a survey of enrollment and degrees in agriculture in 1960[2] comprised the source of data for the present study. From the universe of curriculum offerings thus determined for the land-grant colleges, a sampling procedure that provided for two-way stratification (by region and by curriculum) resulted in 419 offerings in 83 differently designated curriculums in 67 institutions. The sample was drawn so as to include every curriculum offered, even if offered under a different name, including those offered at only one institution.

All non-land-grant colleges offering agriculture were included, because there were only a few institutions in this group where more than one or two curriculums were offered. This non-land grant group added 197 curriculum offerings in 61 institutions.

The total number of questionnaires mailed out was, therefore, 616, a number designed to gather data on 83 differently named curriculums, offered in 128 institutions. The return was 96 percent from land-grant, and 85 percent from non-land-grant, institutions. The analysis in this report is limited, however, to the 16 curriculums in which a total of 15 or more reports were received. Table 4 gives the number of these curriculums reported by land-grant and non-land-grant colleges. Table 5 gives data on the percentage distribution of requirements in the various curriculums.

[1] Specialist for Agricultural Colleges.

[2] Henry S. Brunner., U S. Department of Health. Education, and Welfare, Office of Education. *Enrollment and Degrees in Agriculture—Institutions of Higher Education, September 1960* (OE-56006). Washington: U.S, Government Printing Office, 1961. 70 p.

TABLE 4. — Number of land-grant and non-land-grant institutions offering those agricultural curriculums reported by at least 15 institutions: Aggregate United States, 1962-63

Curriculums offered by at least 15 institutions	Land-grant institutions	Non-land-grant institutions
Agricultural business	13	12
Agricultural economics	35	6
Agricultural education	40	18
Agricultural engineering	16	5
Agricultural science	6	15
Agronomy	53	15
Animal husbandry	33	18
Dairy husbandry	17	6
Dairy manufacturing	16	3
Dairy science	21	0
Fish and game and wildlife	12	3
Forestry	11	6
General agriculture	31	31
Horticulture	36	11
Poultry husbandry	28	5
Soil science	14	1

Certainly the reporting of requirements in the different categories was influenced by the administrative organization in the several institutions, especially perhaps, in the curriculums of agricultural business, agricultural economics, agricultural education, and agricultural engineering. Where these curriculums are administered in some division other than the School or College of Agriculture, or administered jointly with some other division, the reporting of requirements for the "major field" might have different meanings. It should be noted that where there appear to be seemingly low requirements in any area of study, there is always a balance in the allowance for electives. In some cases the administrative system of advising students allows for almost complete freedom of student choice in the area of specialization while specifying requirements in other areas in order to insure a broad preparation. Thus, a few institutional reports made entries of zero necessary as lows (L). The data were tabulated as reported, however, and because the questionnaire form was sent to the deans and directors of resident instruction in agriculture, it must be assumed that these tabulations represented the "official" agricultural administration interpretation.

These data invite an interesting comparison with the recommendations of the Committee on Educational Policy in Agriculture of the National Academy of Sciences, National Research Council. That Committee suggested in 1962 that "as a basis for attaining

the status of a Bachelor of Science in Agriculture" . . . a curriculum, in which 130 credits are required for graduation should include:

Subject Area		Recommended Percentage Requirement
General Education — 65 credits, as follows:		(50%)
1. Communications — 12 credits	(9.2%)	
2. Humanities and Social Science — 18 credits	(13.9%)	
3. Mathematics and Statistics — 9 credits	(6.9%)	
4. Physical Science — 12 credits	(9.2%)	
5. Biological Science — 14 credits	(10.8%)	
Major field — 26 credits		(20%)
Supporting courses to major field — 26 credits		(20%)
Electives — 13 credits		(10%)

Although the data for 1962 show the expected variation among curriculums on account of different objectives and interest, and considerable difference among institutions in the organization of any particular curriculum, the total picture of the average offerings indicates that the recommendations by the Committee are rapidly being met.

Comparisons can be made by taking the averages of the 16 mean percentages in each column. These calculated unweighted means for the seven columns are:

Agriculture	30%
Natural sciences and mathematics	27%
Humanities	10%
Social science	12%
Other requirements (including psychology)	1%
Electives	16%
Physical education and R.O.T.C.	4%

TABLE 5. — Credits allocated to specified areas of study, as percents of total credits required for graduation with a major in Agriculture: Aggregate United States, 1962-63

Curriculum	No. of curriculums	Value symbols*	Percent of required credits allocated to: Agriculture (Total:—major and supporting courses)	Natural sciences and mathematics	Humanities	Social sciences	Other	Physical Education and R.O.T.C.	Electives
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Agricultural business	25	M	27	18	10	21	1	3	20
		H	55	36	16	42	4	9	44
		D9	52	27	13	37	3	6	32
		D5	26	15	10	21	0	3	21
		D1	15	9	5	9	0	0	7
		L	2	6	5	6	0	0	6
Agricultural economics	41	M	24	21	10	20	1	4	20
		H	46	42	16	43	5	9	54
		D9	38	30	13	37	2	7	39
		D5	25	21	10	20	0	4	18
		D1	7	13	5	4	0	0	8
		L	0	10	4	2	0	0	6
Agricultural education	58	M	39	20	10	13	3	4	11
		H	60	35	18	31	19	9	30
		D9	53	28	15	23	6	8	24
		D5	39	20	10	12	2	4	10
		D1	24	13	6	5	0	0	0
		L	18	8	4	2	0	0	0
Agricultural engineering	21	M	38	32	9	9	0	3	9
		H	57	54	16	24	0	10	19
		D9	53	50	14	20	0	9	17
		D5	37	29	9	7	0	3	8
		D1	17	21	6	2	0	0	4
		L	16	19	5	2	0	0	0

Agricultural science	21	M H D9 D5 D1 L	20 39 35 18 4 2	32 49 46 32 20 10	12 18 17 11 8 8	8 29 14 7 2 2	1 4 2 0 0 0	4 9 7 5 2 0	23 42 37 25 8 8
Agronomy	68	M H D9 D5 D1 L	29 48 39 28 21 10	32 49 45 32 17 12	10 23 15 9 5 4	10 33 19 9 5 2	0 5 2 0 0 0	4 11 8 4 0 0	15 40 32 13 5 0
Animal husbandry	51	M H D9 D5 D1 L	32 52 45 32 20 13	27 47 37 28 17 12	11 25 16 11 6 4	10 27 18 9 3 2	1 4 2 0 0 0	3 12 6 3 1 0	16 33 26 15 9 5
Dairy husbandry	23	M H D9 D5 D1 L	32 51 42 31 23 20	26 46 43 23 14 9	10 13 13 10 6 6	12 26 24 11 6 2	1 2 2 0 0 0	4 7 7 3 1 0	15 32 26 16 4 4
Dairy manufacturing	19	M H D9 D5 D1 L	27 34 34 27 20 20	27 47 37 28 17 14	10 16 16 9 6 5	15 33 28 12 5 4	0 0 0 0 0 0	4 8 8 3 0 0	17 27 26 16 7 5

TABLE 5. — Credits allocated to specified areas of study, as percents of total credits required for graduation with a major in Agriculture: Aggregate United States, 1962-63—*Continued*

Curriculum	No. of curriculums	Value symbols*	Percent of required credits allocated to: Agriculture (Total major *and* supporting courses)	Natural sciences and mathematics	Humanities	Social sciences	Other	Physical Education and R.O.T.C	Electives
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dairy science	21	M	29	29	11	10	0	3	18
		H	37	44	15	25	1	8	34
		D9	37	44	15	24	1	8	33
		D5	27	29	11	8	0	3	16
		D1	23	14	4	0	0	1	9
		L	20	14	4	0	0	1	8
Fish and game, and wildlife	15	M	19	42	13	8	0	4	14
		H	33	64	21	20	0	8	29
		D9	32	59	21	13	0	8	27
		D5	24	41	13	7	0	4	13
		D1	7	17	8	5	0	0	4
		L	7	14	5	2	0	0	2
Forestry	17	M	41	31	10	7	0	5	8
		H	58	48	13	14	0	5	17
		D9	55	47	11	12	0	5	13
		D5	41	30	10	6	0	2	9
		D1	33	20	7	3	0	0	0
		L	26	19	4	2	0	0	0
General agriculture	62	M	32	24	12	10	1	3	18
		H	53	38	25	32	5	10	53
		D9	45	34	19	16	2	6	35
		D5	31	24	11	9	0	3	16
		D1	21	15	7	5	0	0	3
		L	2	7	5	4	0	0	0

Horticulture	47	M	29	30	10	11	1	3	16
		H	44	56	25	31	4	10	59
		D9	39	44	14	20	2	8	27
		D5	29	30	10	10	0	4	15
		D1	19	17	7	5	0	0	5
		L	2	10	6	2	0	0	1
Poultry husbandry	33	M	28	28	10	11	1	3	19
		H	55	46	15	31	4	8	54
		D9	40	43	13	20	4	8	29
		D5	28	28	9	10	0	3	17
		D1	17	17	6	3	0	0	5
		L	0	14	5	2	0	0	0
Soil science	15	M	27	36	8	7	1	2	19
		H	62	54	15	25	7	6	56
		D9	37	50	13	14	2	6	37
		D5	27	41	8	7	0	3	16
		D1	10	21	4	2	0	0	5
		L	10	20	0	0	0	0	2

*Symbols: M = the mean or average of the percentage values in the array under consideration; the mean or average percentage values may not add to 100 percent due to rounding.

H = the highest percentage value shown in the array.

D9 = the value that best represents the level above which approximately 10 percent of the total number of curriculums fall.

D5 = the value that best represents the midpoint in the array.

D1 = the value that best represents the level below which approximately 10 percent of the total number of curriculums fall.

L = the lowest percentage value shown in the array.

The Committee of the National Academy of Sciences would have 27 percent of the curriculum alloted to biological science, physical science, and mathematics and statistics. The collected data show 27 percent to be the practice.

The Committee would have 23 percent allotted to communications, humanities, and social science. The system by which the data were gathered included "communications" in the humanities category, but this category, when taken with social science, shows an overall average of 22 percent.

For the area of agriculture and technology the comparison is also quite close. The Committee suggested 20 percent in the major field, 20 percent in supporting courses, and 10 percent in electives. The data show 16 percent in the major field, 14 percent in supporting courses, and 20 percent in electives, R.O.T.C., and physical education combined. The total is the same, namely 50 percent.

Chapter III

BIOLOGICAL SCIENCES

by

Thomas E. Furman[1]

Botany, general biology, and zoology were the disciplines selected for study in the biological sciences. To the 507 questionnaires mailed in October 1962, covering these fields, 486 responses were received, giving a response rate of 96 percent. The 370 responses which were usable constitute the basis of this chapter.

General Findings

When only averages are considered, uniformity is the most striking feature of the curriculums in botany, general biology, and zoology. Although great variation existed in requirements among individual institutions, each major field of study receives approximately one-fourth of the total number of credits (see table 6). On the average, electives make up about another fourth of the total. The other fields of study also contribute to the uniformity of the pattern. The difference in course credits between the B.S. and B.A. degrees is not great in any of the three disciplines. The apparent differences lie in a larger requirement in mathematics, statistics, and physical sciences and a correspondingly smaller requirement in the humanities and free electives for the B.S. than for the B.A. program.

Apart from the numerical data, which do not show very striking differences between the two degrees, many of the responding institutions remarked on their questionnaire that the requirements for the B.S. and B.A. degrees in a given major are identical, and that the title on a diploma is the graduate's choice. In other cases, institutions noted that credits in the physical sciences, beyond those required, were "recommended" for B.S. candidates. In this

[1] Botany Department, Howard University, Washington, D.C.; formerly Specialist for Curriculum Patterns in the Biological Sciences, U.S. Office of Education.

TABLE 6. — Credits allocated to specified areas of study, as percents of total credits required for graduation with a major in Botany, Zoology, or General Biology, by type of degree: Aggregate United States, 1962-63

Curriculum	No. of Curriculums	Value of symbols*	Percent of required credits allocated to:								
			Biological sciences		Physical sciences	Mathematics and statistics	Humanities	Social sciences	Other	Physical education and R.O.T.C	Electives
			Major area of concentration	Other than major area of concentration							
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Botany, B.S.	43	M	18	8	12	4	20	9	1	3	25
		H	13	22	27	9	43	19	12	7	53
		D9	27	18	22	8	27	15	5	5	38
		D5	20	7	12	5	22	9	0	2	24
		D1	6	0	5	0	9	5	0	0	10
		L	3	0	0	0	5	2	0	0	0
General biology, B.S.	120	M	3	21	14	4	25	8	1	1	21
		H	30	39	27	14	44	16	9	15	49
		D9	7	28	22	7	39	12	4	6	38
		D5	3	21	13	5	24	9	0	3	20
		D1	0	15	6	0	15	5	0	0	5
		L	0	0	0	0	9	2	0	0	0
Zoology, B.S.	60	M	17	9	15	5	20	9	1	3	21
		H	36	29	25	10	37	19	18	8	53
		D9	26	23	22	8	28	14	3	6	36
		D5	19	8	15	5	19	9	0	3	21
		D1	6	0	6	0	10	5	0	0	8
		L	0	0	0	0	5	0	0	0	0

Botany, B.A.	45	M	18	8	9	3	21	9	1	2	29
		H	33	27	22	14	47	22	8	5	58
		D9	25	23	17	5	30	13	5	5	44
		D5	20	7	8	2	22	10	0	2	28
		D1	3	0	0	0	11	5	0	0	12
		L	0	0	0	0	7	0	0	0	4
General biology, B.A.	141	M	4	22	12	3	26	9	1	2	21
		H	29	40	25	11	51	19	23	9	47
		D9	7	29	21	6	39	12	4	3	39
		D5	4	22	12	4	25	9	0	2	20
		D1	0	14	3	0	15	5	0	0	5
		L	0	3	0	0	5	0	0	0	0
Zoology, B.A.	67	M	17	9	11	4	22	9	1	2	25
		H	36	26	23	10	45	22	9	19	58
		D9	26	20	21	7	31	13	3	4	41
		D5	19	6	11	3	23	10	0	2	23
		D1	7	0	0	0	13	5	0	0	8
		L	0	0	0	0	9	3	0	0	0

*Symbols: M = the mean or average of the percentage values in the array under consideration; the mean or average percentage values may not add to 100 percent due to rounding.

H = the highest percentage value shown in the array.

D9 = the value that best represents the level above which approximately 10 percent of the total number of curriculums fall

D5 = the value that best represents the midpoint in the array.

D1 = the value that best represents the level below which approximately 10 percent of the total number of curriculums fall

L = the lowest percentage value shown in the array.

sense, current practice may be reflecting a trend toward more training in chemistry and physics for majors in the biological sciences, a trend which has not yet resulted in formal increases in requirements in this field.

If the curriculums in different subject areas are compared with each other, the salient difference among them appears to be the larger bloc of humanities credits in general biology programs than in either the botany or zoology curriculums. This is compensated for by a decrease in elective credits. Similarity is generally the striking feature, however, rather than difference.

The distinction among these curriculums appears to lie principally in the relative emphasis on particular courses within the general field of concentration. As might be expected, the detailed data of individual questionnaires show that in zoology curriculums, courses in zoology are emphasized; in botany curriculums, courses in botany. In the general biology curriculums, however, courses covering the area of general biology play a relatively minor role. Rather, students in such programs take the preponderance of their studies in other biological science courses — botany, zoology, genetics, physiology, and so forth. This is in accord with a common view that general biology training, as such, is a brief introduction, suitable for persons not intending to major in biological specialties, or preliminary to more advanced study in specialized fields. The current curriculum studies in high school biology instruction may conceivably change this picture.

The considerable variation in requirements, as indicated by the range of values from L to H in each cell of the table, has already been mentioned. As an extreme example of such variation, a zero appears as the L value in the major area of concentration column for the B.A. in botany. A reader may wonder how a student could major in botany without being required specifically to take a course called botany. Among the several possible reasons for this are that, in some institutions, all courses in biological sciences have a biological science listing, with no courses being listed specifically as botany, and that, in some institutions, there are no specified requirements in botany for a botany major, but simply a requirement that a student pass suitable examinations in the subject. There is no doubt, however, that knowledge of botany sufficient to meet the institution's standards is required, even in the absence of formal requirements.

Chapter IV

ENGINEERING

by

Henry H. Armsby

and

Harold A. Foecke[1]

During the past decade, engineering education has accounted for more than 300,000 bachelor's degrees — nearly 1 out of every 7 bachelor's degrees awarded to men, and slightly more than 1 out of every 12 of all bachelor's degrees conferred. When this study was being planned and initiated, approximately 240 institutions of higher education in this country were awarding bachelor's degrees in engineering.[2] At the vast majority of these institutions, the bachelor's degrees in engineering required the equivalent of 4 academic years of full-time study — either in a full-time, day program (by far the predominant pattern), in a cooperative program (usually requiring about 5 calendar years because of some planned alternation between periods of study and employment), or in an evening program (requiring roughly 6 to 8 calendar years, depending on individual circumstances of the students). At a few institutions (fewer than 20), one or more of the engineering curriculums required 5 academic years of study (almost invariably full-time, day programs); in about five institutions, *all* engineering degree programs required 5 academic years.

Most of the institutions which award engineering degrees offer curriculums in several different fields. A count of all the engineering curriculums having distinct titles (no matter how similar)

[1] Dr. Armsby conducted this study until his retirement as Chief for Engineering Education in April 1962. His successor, Dr. Foecke, Specialist for Engineering Education, was responsible for completion of the study and for the preparation of this chapter.

[2] The term "bachelor's degrees in engineering" should be taken to mean baccalaureate-level degrees earnd by pursuit of a curriculum which the institution regards as an engineering curriculum. The actual wording on diplomas varies greatly among institutions. For more information see Walter C. Eels and Harold A. Haswell, *Academic Degrees*. Bulletin 1960, No. 28, U.S. Office of Education, and Harold A. Foecke, "Engineering Degree Practices," *Journal of Engineering Education*, Vol. 53, No. 6, February 1963.

would show a total of approximately 60. In nearly half of these cases, however, the curriculum would be found in only one institution,[3] and well over half of all engineering degree programs are concentrated in four fields — chemical, civil, electrical, and mechanical engineering.

Assuming that when an institution reports enrollments and/or degrees in a particular engineering field, it does have a curriculum in that field, then the total number of separate engineering curriculums in this country at the time this study was launched was approximately 1,200.

Curriculums in the less common fields of engineering are, on the whole, found primarily in institutions which offer a large number of engineering degree programs, including, of course, the more common fields. Conversely, the institutions which offer only a few curriculums usually offer only the more common fields. Consequently, the institutions which were asked to report on the "smaller" fields (where the sampling rates were very high) were not a random sample as to institutional type, but were made up primarily of large, multi-curriculum institutions, a situation that was unavoidable by any sampling procedure. By the same token, the institutions which reported on the more popular fields were, as a group, biased toward the small institutions, which offer largely only these more common fields. (For a discussion of the sampling procedure in Engineering, see page 2.)

Collection and Treatment of Data

The questionnaire for engineering was the first of the questionnaires to be designed and distributed for this survey. It was specifically designed to obtain data in a way that would permit a convenient comparison with recommendations made in a 1955 report[4] popularly known as the "Grinter Report." As a pretest, a preliminary copy of the questionnaire was sent to 10 prominent engineering educators who not only represented a number of important engineering associations and societies, but also a suitable variety of engineering schools and engineering degree programs.

Beginning on January 19, 1962, 396 report forms were distributed to deans of engineering at 233 institutions. On March 7,

[3] Armsby, Henry H. "An Analysis of 'Other' Engineering Curricula," *Journal of Engineering Education*, Vol. 49, No. 5, February 1959.

[4] *Report on Evaluation of Engineering Education.* Urbana, Ill.: American Society for Engineering Education, 1955.

a follow-up mailing was made to 77 institutions which had not yet replied. A final follow-up letter was sent on March 26 to two small groups: those from which no reply had been received, and those which had not resubmitted questionnaires returned to them for correction or modification.

A few institutions reported not offering some curriculum on which they had been asked to report. This was to be expected, because the existence of a curriculum had been inferred from previous enrollment and degree data, supplied almost 2 years earlier by the registrar of the institution. In a few other cases, institutions reported on a curriculum other than the one on which they had been asked to report. Depending on individual circumstances, some of these were accepted as useful returns; in effect, these slightly altered the sampling rate in that field.

Item I-F ("Other Required Subjects") was used much more than had been intended when the questionnaire was designed. Engineering orientation, engineering graphics, professional seminar courses, etc., were supposed to have been included under Item I-D-2-b ("Engineering Analysis and Design — Other Departments"), but the definition of this category was apparently unclear. Whenever the list of "Other Required Subjects" obviously included courses that had been anticipated under Item I-D-2-b, those courses were transferred to the intended category in the editing process. This was often difficult to determine, however, and it is quite likely that the data in the "Other" category are somewhat inflated.

There was also wide variation in the respondents' interpretations of "Elective Courses," with the result that the data probably indicate a greater range of elective practices than is actually the case. Finally, the use of the word "department" in the two subdivisions of Item I-D-2 gave rise to diverse interpretations. Courses which were essentially engineering in character but were taught in a science department (e.g., a geology department) were apparently recorded fairly frequently in the section of the questionnaire for the sciences. This too tended to introduce into the results an indication of a range of practices which may be more apparent than real.

General Findings

This presentation is restricted to the six largest fields (in terms of degrees awarded): aeronautical, chemical, civil, electrical, indus-

trial, and mechanical engineering. Collectively, these fields account for approximately 86 percent of all engineering bachelor's degrees awarded. Furthermore, no excluded curriculum accounts for more than 2.5 percent of engineering bachelor's degrees.

For purposes of this report, the accredited and unaccredited groups have been combined. The differences between pairs of groups in particular fields did not appear statistically significant in any case, and, furthermore, the directions of these differences varied somewhat from field to field, so that there was apparently no overall pattern of difference. Unless further analyses yield contrary evidence, it appears that unaccredited engineering curriculums are not distinguished from accredited ones by a markedly different allocations of credit-hours.

The Grinter Report contained the following recommendations for bachelor's degree requirements:

Subject Area	*Recommended Percentage Requirement*
Humanities and Social Studies	About 20 percent
Mathematics and Basic Sciences (about equal weight)	About 25 percent
Engineering Sciences	About 25 percent
Sequence of Engineering Analysis, Design, and Engineering Systems, including the necessary technological background	About 25 percent
Options, or electives, in: Humanities and Social Studies Basic Sciences Engineering Sciences Research or Thesis Engineering Analysis and Design Management	About 10 percent

It should be noted that the percentages total more than 100 percent, a deliberate "error" by the authors of the report, intended to discourage a uniform and rigid adoption of the recommendations. The data showing the actual distributions in 1962 are shown in table 7.

The mean values, appearing in the upper left-hand corners of the cells, show the most striking characteristic of the data: the uniformity of curriculum allocations for the different engineering fields. There are only two noticeable departures from the general pattern. In chemical engineering the mean percentage in the

"major" department is considerably less than comparable means in the other fields. This "deficiency" is matched by an unusually high mean value in the natural sciences and mathematics. These data merely confirm common knowledge about chemical engineering programs: that they require virtually all the basic science courses required for all engineering fields, plus several additional courses in chemistry, which increase the percentage of the curriculum devoted to natural science.

The other noticeable departure is in civil engineering, where the mean percentage devoted to "major" department is somewhat larger than the comparable percentages for the other fields. For this "excess" there is no compensatory deviation in other subject-matter fields; there are only slight differences for the other broad subject-matter areas.

For the sake of uniformity between table 7 and the comparable tables in other chapters, the percentage of the curriculum devoted to engineering sciences was not presented separately. Hence, the only way of checking actual distributions against the Grinter recommendations is by checking the totals for engineering. Except for chemical engineering, the means of the percentages devoted to engineering vary between 42 and 48 percent, or slightly less than the recommended 50 percent. However, it must be remembered (1) that the recommendations contained no "Other" category and none for "Physical Education and R.O.T.C." and (2) that they totaled 105 percent. Except for chemical engineering, the means of the percentages devoted to "Natural Science and Mathematics," which vary between 26 and 28 percent, are quite uniform, and they exceed slightly the recommended 25 percent.

The means of the percentages devoted to the separate areas of "Humanities" and "Social Sciences" are also very uniform. This is not too surprising, since at any given institution the requirements in these areas tend to be the same for students in all engineering fields. The only exception is that industrial engineering students are sometimes required to take psychology, which the respondents probably usually classified under "Social Sciences." It may be significant that the mean of the percentages for "Social Sciences" in industrial engineering does depart slightly from the pattern for that column.

The sums of the means of the percentages for the "Humanities" and "Social Sciences" columns vary between 16 and 19 percent (the latter being industrial engineering). This is a bit less than the recommended "about 20 percent."

TABLE 7. — Credits allocated to specified areas of study, as percents of total credits required for graduation with a major in selected curriculums in Engineering: Aggregate United States, 1962-63

Curriculum	No. of Curriculums	Value of symbols*	Percent of required credits allocated to:							
			Engineering		Natural sciences and mathematics	Humanities	Social sciences	Other	Physical education and R O.T.C.	Electives
			Major area of concentration	Other than major area of concentration						
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Aeronautical engineering	17	M	16	31	28	12	5	1	2	3
		H	24	47	38	20	12	5	6	17
		D9	23	40	33	19	9	3	5	9
		D5	18	31	28	11	7	0	3	1
		D1	8	23	24	7	0	0	0	0
		L	6	22	23	4	0	0	0	0
Chemical engineering	27	M	11	24	40	11	5	1	2	7
		H	21	43	46	19	11	11	7	18
		D9	16	31	44	17	9	1	6	17
		D5	12	23	39	11	5	0	2	6
		D1	4	16	35	4	0	0	0	0
		L	3	13	31	4	0	0	0	0
Civil engineering	32	M	23	25	27	11	5	1	3	5
		H	35	41	36	23	10	11	9	14
		D9	31	36	30	20	9	7	6	13
		D5	23	25	27	10	5	0	3	5
		D1	16	18	23	6	0	0	0	0
		L	13	15	22	4	0	0	0	0

Electrical engineering	36	M	17	25	28	12	6	2	2	8
		H	36	39	36	19	12	12	8	18
		D9	27	35	35	18	10	5	7	15
		D5	15	26	28	11	6	0	2	8
		D1	10	15	25	7	0	0	0	3
		L	2	0	21	4	0	0	0	0
Industrial engineering	14	M	18	25	26	11	8	4	3	6
		H	27	35	31	18	15	15	7	16
		D9	27	35	31	18	15	15	7	16
		D5	19	24	26	11	8	4	3	6
		D1	10	17	22	4	2	0	0	0
		L	10	17	22	4	2	0	0	0
Mechanical engineering	36	M	16	30	26	12	5	1	3	7
		H	25	49	34	26	9	21	8	17
		D9	23	39	31	19	8	3	6	15
		D5	16	29	26	11	5	0	3	5
		D1	8	23	23	6	0	0	0	0
		L	4	11	16	3	0	0	0	0

*Symbols: M = the mean or average of the percentage values in the array under consideration; the mean or average percentage values may not add to 100 percent due to rounding.

H = the highest percentage value shown in the array.

D9 = the value that best represents the level above which approximately 10 percent of the total number of curriculums fall.

D5 = the value that best represents the midpoint in the array.

D1 = the value that best represents the level below which approximately 10 percent of the total number of curriculums fall.

L = the lowest percentage value shown in the array.

The means of the percentages devoted to "Electives" varied between 3 and 8 percent, with all values being less than the recommended 10 percent. As pointed out, however, in the preceding section, some of the "electives" were removed from the "Elective" category to some other that seemed more appropriate. This editing procedure was probably extensive enough to reduce the average percentages in this category.

One other apparent feature of table 7 which should be mentioned is the wide range in percentage values found in each cell. Especially noticeable are the unusually low percentages shown as the minimum percentage required for the major for some fields — 2 percent in electrical engineering and 3 percent for chemical engineering. Examination of these extreme cases and others near them indicates that when the percentage listed by an institution was unusually low, it was usually counterbalanced by a high percentage in engineering science and, less frequently, in the natural sciences. The extreme variation shown in the column for the major area of concentration is therefore due to differences in institutional interpretations of the term "engineering science."

The pervasiveness throughout the entire table of a wide range between highest and lowest percentages reported and the unusual magnitude of this range in many cases clearly suggests that curriculums in the engineering fields represented here vary considerably among the different institutions.

Chapter V

HUMANITIES

Part I: English

by

Donald R. Tuttle[1]

The Sample

In English, 267 questionnaires were distributed. Six institutions did not reply, four declined to participate in the survey, and one sent in the questionnaire after the tabulation was complete, so that a total of 257 were returned in time, or approximately 96 percent of the sample. All but three of the returned questionnaires were usable, or became usable after further correspondence and reference to catalogs. The survey is based, therefore, on the practices of 254 institutions.

A number of English departments would have preferred other classifications of knowledge than those appearing on the questionnaire. Many regard history as one of the humanities, for example, rather than as a social science. Clearly, there is no universally accepted classification of the subjects in the college curriculum. Nevertheless, by the exercise of ingenuity and at the expense of a number of compromises, 254 of the 257 institutions were able to describe their curriculums reasonably well by means of the classifications used in the questionnaire.

Although information was collected about teacher preparation programs, this publication confines itself to programs leading to the degrees of Bachelor of Arts and Bachelor of Science. Data presented in the table are based on 247 B.A. and 23 B.S. programs. The total exceeds 254 because 18 institutions offer English majors leading to both degrees, while 229 offer only the B.A. and 5 the B.S. On the other hand, 2 of the responding institutions grant teacher education degrees exclusively.

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[1] Specialist for College English.

In comparing the statistics for the B.S. programs with those for the B.A., the reader should remember that 23 responses are a very small sampling compared to 247. Further, the institutions granting the B.S. are a very disparate group, including, in order of frequency, (1) State institutions not legally authorized to grant the B.A. degree; (2) institutions at which the B.S. degree provides to the student a means of avoiding language study or other B.A. requirements, including a few schools where mathematics or science requirements are reduced despite the name of the degree; and (3) a few church-affiliated institutions in which the B.A. is still primarily granted only for classical studies. With more than 11 times as many B.A. as B.S. programs, one would naturally expect the extremes reported in the B.A.-granting institutions to be greater, as they are; however, the middle scores of the two groups are relatively close — at many points, almost identical.

The Mean Scores

The differences, as well as the similarities, between the two English degree curriculums can be easily ascertained by comparison of the relevant figures in each of the vertical columns of table 8. For example, the figures at the top left of each cell, indicating the mean or average requirements in the two curriculums, show that the average requirement in English for a B.S. with an English major is 27 percent and, in other humanities, 18 percent; thus, 45 percent is the average total requirement in humanities for this degree. The average requirement in English for a B.A. with an English major is 28 percent, and, in other humanities, 22 percent; thus, 50 percent is the average total requirement in humanities here. The chief difference in emphasis between the B.S. and B.A. English majors is that the latter programs put greater stress on language study. The rest of the table shows that the two differently labeled majors are substantially identical, except that the B.S. programs require, on the average, 2 percent more hours of natural sciences or mathematics than the B.A. programs (approximately one 3-semester-hour course).

The Fifth Decile Scores

In a large randomly selected sample, one would ordinarily expect the fifth decile to approximate the mean. In the humanities other than English, however, the average exceeds the fifth decile in the B.S. and B.A. programs by 3 and 2 percent, respectively. When

TABLE 8. — Credits allocated to specified areas of study, as percents of total credits required for graduation with a major in English, by type of degree: Aggregate United States, 1962-63

Curriculum	No. of curriculums	Value symbols*	Percent of required credits allocated to:						
			Humanities		Natural sciences and mathematics	Social sciences	Other	Physical education and R.O.T.C.	*Electives
			English	Other					
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
English, B.S.	23	M	27	18	12	8	3	2	30
		H	32	42	18	17	14	6	62
		D9	31	41	17	16	13	5	42
		D5	28	15	11	7	2	2	32
		D1	19	5	6	0	0	0	14
		L	18	4	4	0	0	0	6
English, B.A.	247	M	28	22	9	9	2	2	29
		H	45	55	19	28	18	10	61
		D9	33	36	13	15	5	4	41
		D5	27	20	9	9	0	2	29
		D1	23	11	5	5	0	0	16
		L	16	0	0	0	0	0	0

*Symbols: M = the mean or average of the percentage values in the array under consideration; the mean or average percentage values may not add to 100 percent due to rounding.

H = the highest percentage value shown in the array.

D9 = the value that best represents the level above which approximately 10 percent of the total number of curriculums fall.

D5 = the value that best represents the midpoint in the array.

D1 = the value that best represents the level below which approximately 10 percent of the total number of curriculums fall.

L = the lowest percentage value shown in the array.

the mean tends to exceed the median, it indicates a tendency toward concentration of values in the lower part of the scale. This situation could arise from the fact that the sample included church-related institutions, which tended to require substantially more philosophy and religion than most of the other institutions. Even though these groups represent a minority of those sampled, their emphasis on these subjects is sufficient to elevate the average of the whole group.

In the column labeled "Other," one finds a similar effect, but for a different reason. This rubric included psychology, geography, education, and miscellaneous fields not categorized on the questionnaire. Here, the scores for both the B.S. and B.A. programs are again higher for the mean than for the fifth decile (the difference in B.A. programs being significant because it again is sufficient to account for a difference of approximately one 3-semester-hour course).

An examination of the data shows that the course causing most of the variation was psychology. In institutions which once were primarily or exclusively teacher-preparatory institutions and which still prepare many teachers, the equivalent of about 6 semester-hours of psychology is likely to be required. However, the great majority of colleges have no psychology requirements for the English major, although some students take it as an elective or as a way of meeting some other requirement. Most students preparing to teach in the elementary and secondary schools are required to complete a course in psychology. This general tendency not to require psychology for students majoring in English except prospective teachers has important implications for those English professors who, in interpreting literature, assume student knowledge of psychology.

Diversity of Requirements

The importance of the high and low figures is that they illustrate the extreme diversity of curriculum patterns for an English major in American higher education. Requirements in English courses vary from 18 to 32 percent in B.S. programs, and from 16 to 45 percent in B.A. programs. In terms of a 120-semester-hour program, the variation would be roughly from 19 to 54 semester-hours. In an institution requiring, for all students, 12 semester-hours (in a 120 semester-hours degree program) of English in the lower division, a 19-hour requirement specifically for the English major necessitates only 7 hours in advanced, or upper

division, courses. At the upper end of the scale, a requirement of 54 semester-hours for an English major allots all but 6 semester-hours of half the college program to English.

Because the questionnaire did not differentiate between English as a general requirement or as required specifically for an English major, these figures overstate the English requirement for the latter by combining it with the general requirement. Conversely, the classification system causes an understatement of the requirements in the humanities other than English for an English major. In comparing the right-hand column under "Humanities" in table 8 with the corresponding column in other tables in this study, one must remember that required lower division courses in English are included under the "Humanities" column for other curriculums, but under the English ("Major area of concentration") column for English curriculums.

The widest variation occurs in the proportion of the curriculum allocated to electives. At some institutions students majoring in English may find every hour prescribed; at others more than three-fifths of the program is devoted to electives. Proportions range from 6 to 62 percent in B.S. programs and from 0 to 61 percent in B.A. programs. The actual range of choice, which is likely to be restricted by scheduling practices and the availability of courses, may be smaller, however, than the figures suggest.

Figures taken from the extremes, of course, suggest more diversity than exists in the greatest number of institutions. Eliminating the top and bottom 10 percent from consideration will enable the reader to see more clearly the range of variation among the great majority (80 percent) of the respondent institutions.

The Central 80 Percent

Among the central 80 percent of the respondent institutions, there appears to be some rough agreement about the proper requirement in English for an English major. Although the requirements for the B.S. vary from 19 percent (first decile) to 31 percent (ninth decile) in this range, the requirements for the B.A., which is granted by a much larger group of institutions, vary only from 23 to 33 percent, i.e., from 28 to 40 semester-hours in 120 semester-hour degree programs. The differences might be further reduced through study of the transcripts of individual graduates, for interested students probably strengthen their required major programs by electing additional courses in the subject.

Eliminating the top and bottom deciles from consideration markedly reduces the range of variation in other categories as well. Nevertheless, considering only requirements for the B.A. degree, we find the institutions at the ninth decile devoting more than 3 times as much of the total curriculum to humanities other than English as those at the first decile (36 percent v. 11 percent), and 3 times as much to the social sciences (15 percent v. 5 percent).

Furthermore, even after the extremes are eliminated, a diversity of philosophy about the place of electives in the English major persists. The ninth decile of institutions offering the B.A. programs allows more than 2½ times as much choice as the 1st decile (41 percent v. 16 percent). But this analysis also makes clear that in most American institutions the principle of electives is solidly established, for even at the first decile, at least in theory, an English major may choose about one-sixth of his courses of study.

Average Requirements for the English Major in Semester-Hours

For the convenience of the reader, the mean, or average, requirements devoted to the various categories of the curriculum are summarized in table 9, both for the B.S. and B.A., first in terms of the percentage of total number of hours for graduation, and secondly in the approximate equivalent of those percentages in semester-hours in a 120 semester-hour degree program.

TABLE 9. — Summary of average number of credits allocated to specified areas in programs for an English major, as (*a*) percents of total credits required and (*b*) semester-hour credits in a 120 semester-hour program, by type of degree: Aggregate United States, 1962-63

Area of study	Mean percent of total credits required[1]		Approximate number of semester-hours (in a 120 semester-hour program)[1]	
	B.A.	B.S.	B.A.	B.S.
English	28%	27%	34	32
Other humanities	22	18	26	22
Natural sciences and mathematics	9	12	11	14
Social sciences	9	8	11	10
Other	2	3	2	4
Physical education and R.O.T.C.	2	2	2	2
Electives	29	30	35	36

[1] Totals do not equal 100 percent or 120 semester-hours, respectively, because of rounding.

Part II: Spanish; Speech and Drama

by

Chester L. Neudling[1]

Questionnaires for Spanish were distributed to a stratified sample of 216 institutions. Two follow-up inquiries were made: the first by mail, the second by telegram. Replies were received from all 216 respondents by mail, telegram, or telephone. Twenty-six replies, however, indicated that the institution did not wish to participate in the study — some because of staff shortages, some because of State regulations limiting their participation in questionnaire surveys, and a few because they did not believe their curriculums could be properly reflected in the questionnaire. In all, 185 questionnaires were returned, or 85 percent of the total distributed.

Of the 185 forms received, 7 indicated offering no major in Spanish, although the liberal arts colleges in this group had reported degrees in Spanish in 1959-60, the year of the data from which the sample was drawn. Sixteen questionnaires were returned uncompleted, and three arrived after the data had been compiled. The report on Spanish, therefore, is based on 159 replies. Of these, nine were from institutions awarding both the B.A. and B.S. degrees in Spanish. A total of 147 institutions reported awarding only the B.A., and 3 institutions, only the B.S. This report is based therefore on 156 B.A. and 12 B.S. curriculums in Spanish.

For distribution of questionnaires in speech and drama (a single category combining both these subjects), a stratified sample of 241 institutions was used. After two follow-up inquiries, 210 institutions, or 87 percent of the sample, returned completed questionnaires. As in the Spanish survey, a number of other institutions replied by letter, telephone, or telegram, but did not participate in the survey.

Of the 210 forms received, 24 indicated offering no major in speech and drama, 4 indicated that only the Bachelor of Fine Arts was awarded in this field, 3 arrived after the material was tabulated, and 1 described a non-standard program which was not suitable for inclusion in this report. The report on speech and drama covers the remaining 178 institutions. Of these, 23 offer both the B.A. and B.S. degree in speech and drama, 151 offer only the

[1] Specialist for the Humanities.

B.A., and 4 offer only the B.S. This report, therefore, is based on 174 B.A. and 27 B.S. curriculums in speech and drama.

The Major

Table 10 gives the percentages of total credits necessary for graduation in different areas of study in undergraduate curriculums for Spanish and for speech and drama majors. It is particularly important to distinguish requirements in a humanities major from other humanities requirements, since the other humanities requirements — for example, English and foreign languages — were found in all curriculums studied and constitute a much larger part of the total curriculum in humanities majors than do the natural sciences or the social sciences.

Requirements for the major itself are remarkably consistent. The mean or average requirements for both the B.S. and B.A. in Spanish and for the B.S. in speech and drama are 26 percent of the total curriculum, and 24 percent for the B.S. in speech and drama. These requirements are slightly lower than those for the B.S. and B.A. in English (27 and 28 percent, respectively), approximately equal to those in the physical sciences and mathematics (except the B.S. in chemistry, 30 percent), and higher than those in the social sciences (20-24 percent).

Other Humanities Requirements

All majors, irrespective of the field of concentration, are required to take substantial proportions of their total curriculum in humanities. For majors in Spanish, these requirements average 21 percent of the total curriculum for the B.S. degree and 20 percent for the B.A. degree. In speech and drama, majors must take an average of 20 percent of the total curriculum in humanities other than the major itself for the B.S. degree, and 26 percent for the B.A. The range of requirements in this area is extreme: from 5 percent of the total curriculum to 55 percent.

Combining the major requirements with other humanities requirements, the total average humanities requirements for majors in Spanish range from 46 percent for the B.A. in Spanish to 47 percent for the B.S., and in speech and drama, from 46 percent for the B.S. to 50 percent for the B.A., with considerable variation among individual institutions. For the student majoring in Spanish or in speech and drama, therefore, half or nearly half of his 4 years of undergraduate study, on the average, will be in the humanities.

The heavy concentration of requirements in the humanities, especially those in areas other than the major, is accounted for, in almost all institutions, by English and foreign languages. Many institutions, especially the church-affiliated ones, also require substantial amounts of course work in philosophy, religion, or theology. Where such requirements are prominent in the curriculum, they permit relatively few free elective courses.

Natural Sciences

Students majoring in humanities are required to take, on the average, a much smaller percentage of their course work in the natural sciences than science majors are required to take in the humanities. The mean requirement in natural sciences runs from 7 percent for the B.A. in speech and drama to 9 percent for the B.S., and from 8 per cent for the B.A. in Spanish to 10 percent for the B.S. As might be expected, requirements are slightly higher in science for the B.S. than for the B.A., though not significantly higher.

Mathematics

Mean requirements in mathematics are extremely low for majors in Spanish or in speech and drama: 3 percent of the total curriculum for the B.S. in Spanish, and 2 percent for the other degree programs reported in this chapter. A number of institutions, in fact, reported *no* requirements in mathematics. In addition, many institutions require mathematics *or* science in stated amounts, so that some students may be graduated with no college mathematics and others with no college science. Since our practice in editing questionnaires was to divide a combined requirement among the alternative subjects (e.g., a 12-hour requirement in mathematics *or* science was shown as 6 hours in each), the figures for these subjects in table 10 may not reflect the actual amounts of course work taken by most students.

Social Sciences

Mean requirements in the social sciences show little variation for the different degrees and majors reported here. They are at approximately the same level as the requirements in the natural sciences: 9 percent of the total requirements for both B.S. and B.A. curriculums in speech and drama, 10 percent for the B.A. in Spanish, and 11 percent for the B.S. in Spanish. As in the natural

TABLE 10. — Credits allocated to specified areas of study, as percents of total credits necessary for graduation with a major in Spanish or Speech and Drama, by type of degree: Aggregate United States, 1962-63

Curriculum	No. of curriculums	Value symbols*	Percent of required credits allocated to:									
			Humanities		Natural sciences	Mathematics	Social sciences	Geography	Psychology	Physical education and R.O.T.C.	Other	Electives
			Major area of concentration	Other than major area								
1	2	3	4	5	6	7	8	9	10	11	12	13
Spanish, B.S.	12	M	26	21	10	3	11	0	0	1	0	27
		H	42	48	19	10	16	0	2	5	2	49
		D9	42	48	19	10	16	0	0	0	0	49
		D5	27	17	8	3	11	0	0	0	0	27
		D1	12	9	0	0	5	0	0	0	0	0
		L	12	9	0	0	5	0	0	0	0	0
Spanish, B.A.	156	M	26	20	8	2	10	0	0	2	0	31
		H	53	55	18	6	20	2	4	9	2	58
		D9	35	30	12	5	13	0	2	4	0	46
		D5	27	18	8	2	10	0	0	2	0	31
		D1	20	10	5	0	5	0	0	0	0	15
		L	6	5	0	0	0	0	0	0	0	0
Speech and drama, B.S.	27	M	26	20	9	2	9	0	1	2	0	31
		H	48	41	19	6	17	2	5	5	0	65
		D9	36	31	15	5	13	0	4	4	0	50
		D5	24	21	10	2	10	0	0	3	0	29
		D1	19	8	5	0	4	0	0	0	0	18
		L	19	5	4	0	0	0	0	0	0	12

Speech and drama, B.A.	174	M	24	26	7	2	9	0	1	2	0	27
		H	48	52	14	8	22	3	9	10	9	49
		D9	30	38	11	5	12	0	3	4	0	43
		D5	23	27	7	0	9	0	0	3	0	28
		D1	19	16	5	0	5	0	0	0	0	13
		L	10	6	0	0	2	0	0	0	0	0

*Symbols: M = the mean or average of the percentage values in the array under consideration; the mean or average percentage values may not add to 100 percent due to rounding.
H = the highest percentage value shown in the array.
D9 = the value that best represents the level above which approximately 10 percent of the total number of curriculums fall.
D5 = the value that best represents the midpoint in the array.
D1 = the value that best represents the level below which approximately 10 percent of the total number of curriculums fall.
L = the lowest percentage value shown in the array.

sciences and mathematics, there is considerable range in social science requirements in all four curriculums. Fifth-decile values for social sciences are slightly higher than those for natural sciences, indicating a larger social science requirement in more than half of the responding institutions.

Other Requirements

These requirements include geography, psychology, physical education or R.O.T.C., and other requirements not specified. Mean requirements in physical education or R.O.T.C. are consistently about 2 percent (lower for the B.S. in Spanish). For psychology, the mean requirement is smaller, running to 1 percent or less. Some institutions define psychology as a social science and include it in general social science requirements. Geography and other requirements were so small that their means had to be rounded to zero.

Electives

Though there is considerable variation in means for electives (from 27 percent to 31 percent), the variation is not consistent for any single degree or major.

The most significant finding about electives is that an enormous range exists in the amounts of electives permitted. Some institutions permit no electives at all in the curriculum for either the B.S. or B.A. degrees in Spanish or for the B.A. degree in speech and drama. At the other extreme, some institutions permit nearly one-half to two-thirds of the curriculum (49 to 65 percent) in free electives. Conversely, this means that, among institutions offering these degrees and majors, the prescribed portion of the curriculum may vary from as little as one-third of the total to all of it.

Similarity in Degree Programs

Requirements for the B.A. and B.S. degrees are either identical, as in the examples noted above, or only slightly different, as table 10 indicates. Of the 12 institutions offering the B.S. degree in Spanish, 9 also offer the B.A. in Spanish, and 3 of these reported identical requirements for both degrees. Of the 27 institutions offering the B.S. degree in speech and drama, 23 also offer the B.A. with the same major, and 2 of these had identical requirements for both degrees.

Chapter VI

PHYSICAL SCIENCES AND MATHEMATICS

by

Clarence B. Lindquist[1]

Identical questionnaires were used for chemistry, physics, and mathematics. Of 271 questionnaires mailed out for chemistry, 263 responses were received — a response rate of 97 percent. Two of the 263, however, were not usable, leaving 261. Of these 261 institutions returning usable forms, 89 reported having a B.S. curriculum only; 76, a B.A. curriculum only; and 96, both B.S. and B.A. curriculums.

For physics 264 questionnaires were distributed. Thirteen institutions did not respond, making a response rate of 95 percent for physics. Five of the returned questionnaires were not usable, leaving 246. Of the 246 institutions returning usable forms, 88 reported having a B.S. curriculum only; 77, a B.A. curriculum only; and 81, both B.S. and B.A. curriculums.

For mathematics 279 questionnaires were distributed. Two institutions replied that they had no mathematics major, one had a graduate program only, and one had a mathematics education curriculum only, leaving a total of 275 institutions which could have possibly participated in the survey. Of these 275 institutions, 9 failed to respond, making a response rate of 95 percent. A total of 16 institutions returned unusable questionnaires. Of the 250 institutions returning usable forms, 48 reported having a B.S. curriculum only, 111 a B.A. curriculum only, and 91 both B.S. and B.A. curriculums.

Percentage Requirements

Table 11 gives the average or mean percentage requirements, as well as the range of percentage requirements, for various areas in both the B.S. and B.A. curriculums in chemistry, physics, and mathematics.

[1] Specialist for Mathematics and Physical Sciences.

TABLE 11. — Credits allocated to specified areas of study, as percents of total credits required for graduation with a major in Chemistry, Physics, or Mathematics, by type of degree: Aggregate United States, 1962-63

Curriculum	No. of curriculums	Value symbols*	Percent of required credits allocated to:								
			Physical sciences and mathematics			Biological sciences	Humanities	Social sciences	Physical education and R.O.T.C.	Other	Electives
			Major area of concentration	Other than major area	Mathematics and statistics						
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Chemistry, B.S.	185	M	30	8	11	2	25	8	2	1	13
		H	41	22	21	15	49	19	10	9	42
		D9	37	12	14	6	38	12	5	4	26
		D5	31	8	12	0	23	9	2	0	12
		D1	23	6	7	0	15	4	0	0	0
		L	18	0	2	0	6	0	0	0	0
Chemistry, B.A.	172	M	26	7	8	2	25	9	2	1	19
		H	42	14	19	19	48	22	8	16	68
		D9	34	10	13	6	36	13	4	4	34
		D5	26	6	9	0	25	9	2	0	18
		D1	20	3	2	0	16	5	0	0	5
		L	15	0	0	0	0	0	0	0	0
Physics, B.S.	169	M	27	6	15	1	24	8	3	1	15
		H	46	19	24	15	48	19	15	12	42
		D9	33	11	21	5	38	12	6	3	29
		D5	29	6	15	0	23	8	3	0	14
		D1	19	0	11	0	14	4	0	0	0
		L	18	0	0	0	9	0	0	0	0

Physics, B.A.	158	M	25	5	14	1	25	9	2	1	18
		H	38	21	26	15	50	22	6	9	61
		D9	32	8	18	5	32	13	4	3	33
		D5	25	6	14	0	25	10	2	0	17
		D1	19	0	8	0	16	5	0	0	6
		L	14	0	0	0	3	0	0	0	0
Mathematics, B.S.	139	M	25	9	Recorded in col. (3)	3	24	8	3	1	27
		H	38	41		15	50	29	9	14	53
		D9	32	17		6	40	12	6	5	44
		D5	24	7		2	22	9	3	0	27
		D1	19	2		0	11	5	0	0	12
		L	8	0		0	5	0	0	0	7
Mathematics, B.A.	202	M	25	6	Recorded in col. (3)	3	28	9	2	1	27
		H	38	20		14	55	22	8	12	53
		D9	32	12		6	44	13	3	5	40
		D5	24	5		3	26	9	2	0	28
		D1	19	0		0	17	5	0	0	12
		L	15	0		0	8	0	0	0	0

*Symbols: M = the mean or average of the percentage values in the array under consideration; the mean or average percentage values may not add to 100 percent due to rounding.
H = the highest percentage value shown in the array.
D9 = the value that best represents the level above which approximately 10 percent of the total number of curriculums fall.
D5 = the value that best represents the midpoint in the array.
D1 = the value that best represents the level below which approximately 10 percent of the total number of curriculums fall.
L = the lowest percentage value shown in the array.

The Major

The average percentage of a student's time devoted to his major varied from 25 percent for a B.A. in physics and for both degrees in mathematics to 30 percent for a B.S. in chemistry. For both chemistry and physics the average requirement for a B.S. degree was higher than for a B.A. degree, being 4 percent higher in chemistry and 2 percent higher in physics. Considerable variation existed in all six curriculums in the percentage requirement for the major, varying as much as from 8 to 38 percent for the B.S. in mathematics. In mathematics some of the low percentages can be attributed to the fact that some institutions commence counting their mathematics requirements with calculus or beyond. The variation between the first and ninth deciles, where approximately 80 percent of the cases lie, was 13 or 14 percent for each degree. The median percentage was in all cases rather close to the average or mean percentage.

Physical Sciences Other Than the Major

The average percentage requirement of physical sciences other than in the major area of concentration varied from 5 percent for a B.A. in physics to 9 percent for a B.S. in mathematics. In all three disciplines, however, this requirement was higher for the B.S. than for the B.A. degree. Although many institutions did not have this requirement at all, and despite considerable variation in the requirement among institutions, the median percentage was the same or very close to the mean percentage in all curriculums. In physics, the additional physical science requirement usually was principally in chemistry; and in chemistry, this requirement usually was principally in physics.

Mathematics and Statistics Requirement in Chemistry and Physics

The average requirement in mathematics was greater for a physics major than for a chemistry major, with a high of 15 percent for the B.S. in physics and a low of 8 percent for the B.A. in chemistry. In both physics and chemistry the requirement is slightly higher for the B.S. than for the B.A. degree. The variation in the mathematics requirement among institutions is considerable, from zero at some institutions to 26 percent at one institution.

Humanities

On the average the humanities comprised about one-quarter of the total credit requirements for graduation, being 24 or 25 per-

cent for all curriculums except the B.A. curriculum in mathematics, where it was 28 percent. The reasons for the relatively large requirement in humanities are first, that practically all institutions have a freshman English or composition requirement; second, that a foreign language requirement is very common in undergraduate programs; and third, that church-affiliated colleges often have large requirements in religion and philosophy, which fall under the category of humanities for purposes of this study. The range in the humanities requirement among institutions was very large in all curriculums, extending from a very low requirement at some institutions to nearly 50 percent at a number of institutions.

Social Sciences

The average social science requirement for each B.S. curriculum was 8 percent and for each B.A. curriculum 9 percent. Although the requirement varied from no requirement at all at just a few institutions to 29 percent at 1 institution, the medians in all curriculums were equal to, or nearly equal to, the means, and the range between the first and ninth deciles in each curriculum was 8 percent, except in the B.S. curriculum in mathematics where this range was 7 percent.

The Biological Sciences

The mean percentage requirement in the biological sciences was 1 percent for physics majors, 2 percent for chemistry majors and 3 percent for mathematics majors. Fewer than half the institutions in this study had any specified requirement in the biological sciences. At some institutions biological science may constitute one of several alternatives in meeting a science requirement.

Physical Education and R.O.T.C.

The mean percentage requirement in physical education or R.O.T.C. was 2 or 3 percent. About a third of the institutions had no credit requirement at all for such subjects. A number of these, however, did require students to take physical education, but awarded no credit for it. The median percentage requirement was in all cases equal to the average percentage.

Other Requirements

This category is comprised of all other required courses, such as psychology, geography, and less common courses, including

orientation, hygiene, health, and various interdisciplinary courses. The percentage requirement for this category amounted to only 1 percent in each curriculum with fewer than half of the institutions having any such requirement at all.

Electives

The term "electives" here means "free electives," or courses which the student is permitted to choose, without being restricted to any set of prescribed alternatives. The mean percentage allowance for free electives was higher for mathematics majors, with the percentage for both degree curriculums being 27 percent, than for chemistry or physics majors. The least allowance for free electives was for the B.S. in chemistry, with an average of only 13 percent. In both chemistry and physics the percentage allowance for free electives was higher in the B.A. than in the B.S. curriculum, amounting to a difference of 6 percent in chemistry and 3 percent in physics. The range in allowance for free electives by institutions was very large in all curriculums, varying from zero to more than half the curriculum at a small number of institutions. In all curriculums, however, the median percentage allowance for free electives was very close to the mean percentage.

General Observations

As was expected, each B.S. curriculum had a larger requirement in science and mathematics than the corresponding B.A. curriculum. Also, each B.A. curriculum had a higher requirement in humanities and social science and a higher allowance for free electives than the corresponding B.S. curriculum.

The B.S. curriculum in chemistry required an average of 51 percent of the total curriculum in the physical and biological sciences and mathematics, compared to 43 percent for the corresponding B.A. curriculum.

This study revealed that mathematics curriculums tend to be more in the liberal arts image than either chemistry or physics, with about a third of the requirement being in mathematics and the natural sciences and more than a quarter of the requirement being allotted to electives. Moreover, about 81 percent of the responding institutions reported having a B.A. curriculum in mathematics, and only about 56 percent a B.S. curriculum. On the other hand, in chemistry and in physics, there were slightly more B.S. than B.A. curriculums.

Chapter VII

SOCIAL SCIENCES

by

James Buhl Shahan[1]

The three disciplines selected as representative of the social sciences for purposes of this report are history, political science, and sociology. A total of 819 questionnaires were distributed to institutions chosen from a nationwide listing of large and small, public and private colleges and universities throughout the United States.

The history questionnaires were distributed to 282 institutions, of which approximately 96 percent (all but 11) responded in some manner. Five institutions indicated offering no major in history and 17 questionnaires were not usable. Usable questionnaires were received from 249 institutions, or 88 percent of 282 institutions. The history major in the B.A. program was offered in 242 institutions. A history major in the B.S. program was offered in 36 institutions, 29 of which offered a history major in both B.A. and B.S. programs. Thus, 7 of these institutions offered a history major only in a B.S. program.

The political science questionnaires were distributed to 267 institutions, of which approximately 93 percent (all but 19) made some response. However, 7 institutions indicated offering no major in political science, and 19 questionnaires were not usable. Usable returns were received from 222 institutions, or 83 percent of the institutions queried. The political science major in a B.A. program was offered in 217 institutions. A political science major in a B.S. program was offered in 32 institutions, 27 of which offered this major in both B.S. and B.A. programs. Thus, 5 of these institutions offered a political science major only in the B.S. program.

The sociology questionnaires were distributed to 270 institutions, of which approximately 95 percent (all but 12) made some

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response. Seven institutions indicated offering no major in sociology, and 18 questionnaires were not usable. Usable returns were received from 233 institutions, or 86 percent of the total queried. The sociology major in a B.A. program was offered in 223 institutions. A sociology major in a B.S. program was offered in 42 institutions, 32 of which offered this major in both B.A. and B.S. programs. Thus, 10 of these institutions offered a sociology major only in a B.S. program.

Percentage Requirements

The average or mean percentage requirements, as well as the range of percentage requirements, for the B.A. and B.S. curriculums in the social sciences are shown in table 12. In comparing the two degree curriculums, the reader should remember that there are only about 15 to 19 percent as many B.S. as B.A. curriculums. This preponderance of the B.A. reflects the traditional view of history, science, and sociology as liberal arts fields. Because of the greater number of curriculums, the B.A. curriculums would be expected to show a greater range in percentage of credit requirements for each of the fields of study.

The Major

The mean percentage requirement for the major areas of concentration varied from a low of 20 percent for the B.S. in political science to a high of 24 percent for the B.A. in history. In history and in political science, the requirement was slightly higher for the B.A. than for the B.S. degree, but the reverse was true for sociology. Considerable variation existed among institutions in the percentage of credit requirements for the major, with as little as 10 percent and as much as 39 percent being required for the B.A. curriculum in sociology.

Social Sciences Other Than in Major Area of Concentration

Courses in the social sciences other than in the major area of concentration are commonly required for those majoring in social science. The purpose of such a requirement, of course, is to broaden the student's background in the social sciences and to enhance his appreciation of the interrelationships among the various areas within the social science field. The mean or average

percentage requirement for such courses was lowest in history, constituting 8 percent in the B.S. curriculum and 7 percent in the B.A. curriculum. The highest percentage requirement was in political science, where 12 percent was required in the B.S. curriculum and 11 percent in the B.A. curriculum. The variation among institutions in the requirement for each curriculum was considerable, ranging from zero to 38 percent for the B.A. curriculum in sociology. In each curriculum, a small number of institutions had no requirement in the social sciences other than the requirement for the major.

Natural Sciences

The mean or average percentage requirement in the natural sciences, consisting of the biological and physical sciences, was 9 percent for each B.S. curriculum and 8 percent for each B.A. curriculum. A very few institutions had no requirement at all in the natural sciences in either the B.S. or B.A. curriculum for history majors. Natural sciences were required in all political science and sociology curriculums, however, although the requirement was quite varied among institutions.

Mathematics and Statistics

There was an identical relationship among the average percentage requirements in mathematics and statistics for the three B.A. curriculums. The average percentage requirement was 2 percent for the B.A. curriculums in history, political science, and sociology; it was 3 percent for the B.S. curriculums in history and sociology, and 4 percent for political science. With the exception of the B.A. curriculum in history, more than half of the other curriculums in each instance had a specific mathematics or statistics requirement.

Humanities

The mean or average percentage in the humanities requirement was highest in the B.A. curriculums, with 25 to 27 percent of the curriculums being devoted to humanities, and it was lowest in the B.S. curriculums, with 19 to 22 percent being devoted to humanities. It is significant that, in each of the B.A. curriculums, the average percentage requirement for the humanities exceeded the average percentage requirement for the major. For the B.S.

TABLE 12. — Credits allocated to specified areas of study, as percents of total credits required for graduation with a major in History, Political Science, or Sociology, by type of degree: Aggregate United States, 1962-63

Curriculum	No. of curriculums	Value symbols*	Percent of required credits allocated to: Social sciences: Major area of concentration	Social sciences: Other than major area of concentration	Natural sciences	Mathematics and statistics	Humanities	Physical education and R.O.T.C.	Other	Electives
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
History, B.S.	36	M	22	8	9	3	21	2	1	34
		H	30	23	17	7	50	6	5	56
		D9	28	19	12	5	45	4	4	53
		D5	22	8	10	2	19	2	0	35
		D1	18	0	4	0	9	0	0	18
		L	14	0	0	0	5	0	0	8
History, B.A.	242	M	24	7	8	2	27	2	1	29
		H	39	29	17	9	55	19	25	56
		D9	29	15	11	5	44	4	5	43
		D5	23	7	7	0	25	2	0	30
		D1	19	0	5	0	15	0	0	12
		L	11	0	0	0	0	0	0	0
Political Science, B.S.	32	M	20	12	9	4	22	2	1	29
		H	36	30	33	17	50	6	16	62
		D9	25	26	17	8	45	5	4	52
		D5	20	9	8	3	20	3	0	33
		D1	15	2	4	0	10	0	0	9
		L	12	0	2	0	7	0	0	8

Political Science, B.A.	217	M	22	11	8	2	25	2	1	28
		H	35	35	17	27	58	19	18	62
		D9	26	20	11	5	40	5	5	42
		D5	21	10	7	2	24	2	0	30
		D1	18	4	5	0	15	0	0	11
		L	12	0	2	0	0	0	0	0
Sociology, B.S.	42	M	22	9	9	3	19	2	2	33
		H	29	22	21	8	46	7	15	59
		D9	27	20	14	7	31	4	5	50
		D5	21	9	8	4	18	3	0	34
		D1	17	2	5	0	10	0	0	11
		L	14	0	4	0	9	0	0	5
Sociology, B.A.	223	M	21	10	8	2	26	2	2	28
		H	39	38	32	11	53	19	19	59
		D9	25	18	11	5	39	5	6	42
		D5	21	10	7	2	25	2	0	28
		D1	17	4	5	0	15	0	0	12
		L	10	0	3	0	9	0	0	0

*Symbols: M = the mean or average of the percentage values in the array under consideration; the mean or average percentage values may not add to 100 percent due to rounding.
H = the highest percentage value shown in the array.
D9 = the value that best represents the level above which approximately 10 percent of the total number of curriculums fall.
D5 = the value that best represents the midpoint in the array.
D1 = the value that best represents the level below which approximately 10 percent of the total number of curriculums fall.
L = the lowest percentage value shown in the array.

curriculums, the average percentage requirement for the humanities exceeded the requirement for the major only in political science. Of significance in comparisons between the humanities requirement and that for the major is that many private and church-affiliated institutions have fairly large requirements in religion and philosophy, which were included in the humanities for purposes of this study.

Physical Education and R.O.T.C.

The mean or average percentage of credit requirements in physical education and R.O.T.C. was 2 percent for each curriculum. Somewhat fewer than half of the institutions reporting in each curriculum had no credit requirement for physical education or R.O.T.C. A number of such institutions, however, did require physical education but without giving credit for it.

Other Requirements

Included in this grouping are geography, psychology, education, and other required courses, such as interdisciplinary courses, that were not included under the other categories. The average percentage credit requirement was 1 percent for the history and political science curriculums, and 2 percent in the sociology curriculums. More than half of the institutions had no requirement at all in this category for all six curriculums, and the highest requirement in the curriculums varied from a high of 5 percent for B.S. curriculum in history to a high of 25 percent for B.A. curriculums in history.

Electives

The mean or average percentage of credit allowance for free electives in each curriculum ranged from 28 percent for B.A. curriculums in political science and sociology to an average of 33 percent for B.S. curriculums in sociology and 34 percent for B.S. curriculums in history. The percentage range of electives among individual institutions was considerable for each curriculum, varying from no electives to 62 percent of the entire curriculum in B.A. curriculums in political science. Church-affiliated institutions very often had little or no allowance for electives because of their heavy requirements in religion and philosophy.

General Observations

The mean or average percentage requirement for the major area of concentration in each of the six curriculums was between one-fourth and one-fifth of the total credit required for graduation. The total requirement in the social sciences is the sum of the requirements for the related social sciences with the requirement for the major itself. Thus, the required courses in the social sciences comprised 30 to 33 percent of the total requirements for graduation in each of the six curriculums. The highest, 33 percent, was in the B.A. curriculum in political science. The humanities component varied from slightly less than a fifth to more than a quarter of the total credit necessary for graduation. The natural sciences together with mathematics and statistics constituted 10 to 13 percent of the total in each curriculum. The allowance for electives in the various curriculums varied from somewhat more than one-fourth to about one-third.

SUMMARY

Bar graphs accompanying summaries of each field of study are used only to illustrate the distribution of requirements and electives in one or two subject specializations within each field.

Table 13 compares the basic data for the Bachelor of Arts curriculums surveyed in this study; table 14, for the Bachelor of Science curriculums.

AGRICULTURE

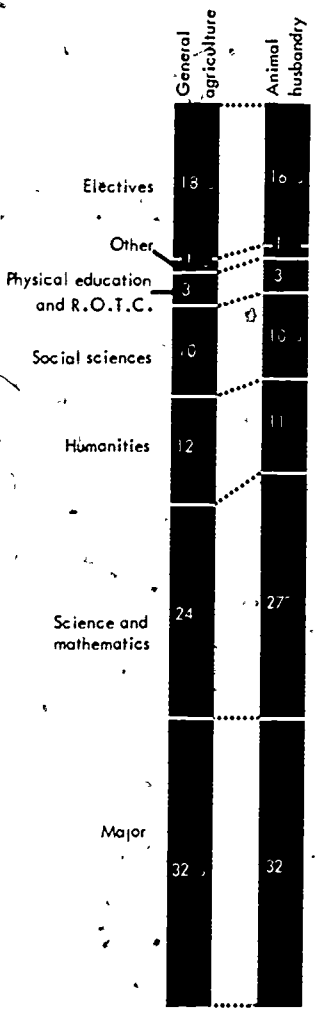

Figure 1. — *Mean percentage requirements for a bachelor's degree in General Agriculture and in Animal Husbandry*

Summary of Findings

The Committee on Agricultural Policy in Agriculture, of the National Academy of Sciences (NAS) recommended that 27 percent of the agriculture curriculum be devoted to natural science and mathematics; analysis of curriculum pattern data shows 27 percent to be the current practice.

The Committee also recommended that 23 percent of the agriculture curriculums be allotted to communications, humanities, and social sciences; the curriculum pattern data show current practice to be 22 percent. The Committee recommended, further, that 20 percent of the curriculum be allotted to the major (data show 16 percent); 20 percent in supporting courses (data show 14 percent); and 10 percent in electives (data show 10 percent).

All 61 non-land-grant colleges and their 197 curriculums were included.

Among the land-grant colleges, the survey sampled 419 offerings of 83 differently designated curriculums in 67 institutions.

BIOLOGICAL SCIENCES

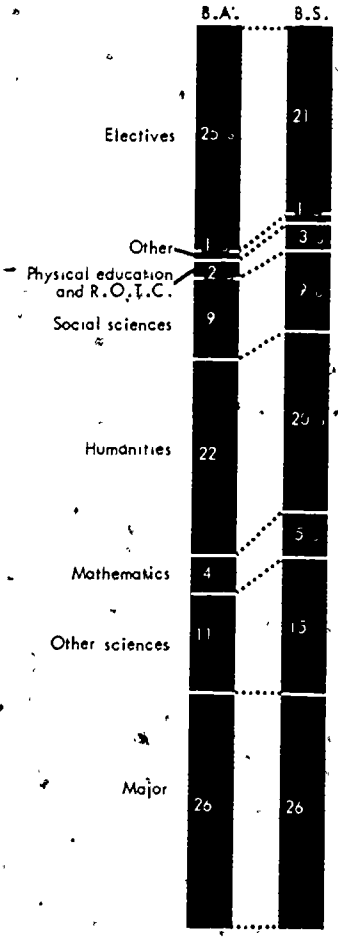

Figure 2.—*Mean percentage requirements for B.A. and B.S. curriculums in Zoology*

Summary of Findings

Similarity is the striking feature of curriculums in the biological sciences.

The major accounts for approximately one-quarter of the total credits required for graduation.

Electives make up another one-quarter of the degree programs in the biological sciences.

There was little difference between the B.S. and B.A. programs; the B.S. tended to require more mathematics and physical sciences and less humanities than the B.A.

The general biology major appears to be designed primarily for those who desire a broad training in biological sciences.

ENGINEERING

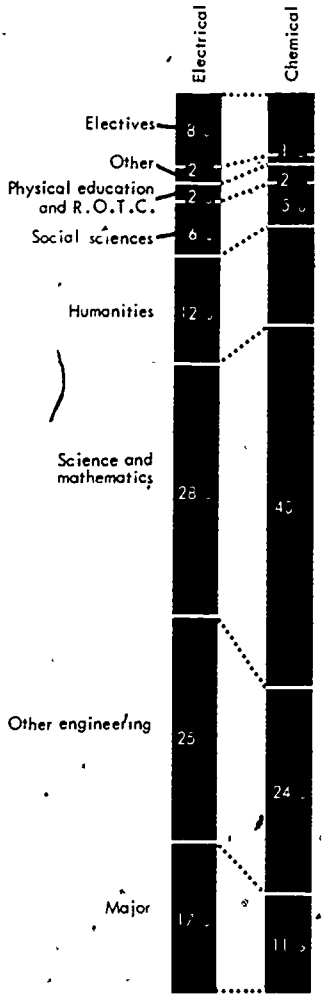

Figure 3.—*Mean percentage requirements for a bachelor's degree in Electrical or Chemical Engineering*

Summary of Findings

Analysis of the data revealed little difference in distribution of credits between accredited and unaccredited curriculums in engineering.

The most striking characteristic of engineering programs is their similarity, with the possible exception of chemical engineering, which had a smaller percentage in the major field, counterbalanced by a higher percentage of natural science.

The percentage of the total curriculum devoted to engineering subjects varied between 42 and 48 percent, except for chemical engineering (35 percent).

The natural sciences and mathematics components in engineering degree programs were high, with 40 percent in chemical engineering, the others varying between 26 and 28 percent.

The humanities and social sciences requirements varied between 16 and 19 percent.

Electives accounted for only 3 to 8 percent of a typical engineering degree program.

In general, the allocations are not too different from recommendations made in 1955 by the American Society for Engineering Education (ASEE).

HUMANITIES: ENGLISH

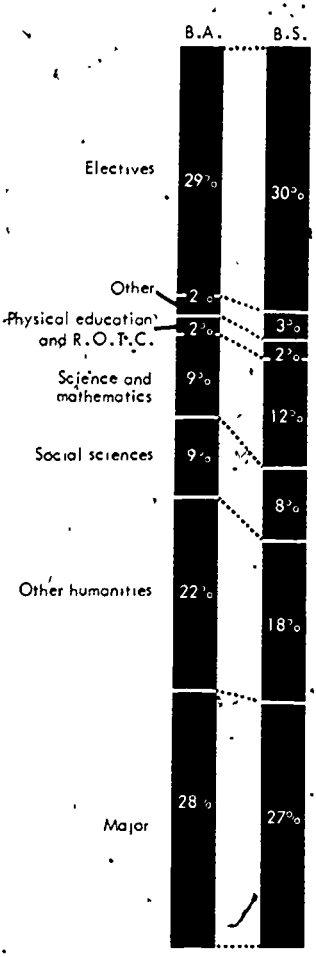

Figure 4.—*Mean percentage requirements for B.A. and B.S. curriculums in English*

Summary of Findings

Of 253 reporting institutions, 246 reported having B.A. English programs and 23 B.S. English programs. Fifty percent of B.A. English programs and 45 percent of B.S. programs are devoted to the humanities.

The average major in English ranges from 18 to 32 percent for the B.S. degrees and from 16 to 45 percent for B.A. degrees.

Degree programs for English majors reveal a wide range in electives at the institutions sampled, extending from 0 to 62 percent for B.S. programs and from 0 to 61 percent for B.A. programs.

There is no significant difference in the average size of the English major in the Bachelor of Arts and the Bachelor of Science curriculums.

The average credit requirement of the English major is 32 to 34 semester-hours, depending on the degree program followed.

Variations in the requirements for graduation in the humanities other than English are immense, ranging from 0 to 55 percent of the total number of credits required for graduation in Arts and Sciences programs. The inclusion of philosophy and religion in this category is the chief reason for this fact, but some religiously oriented institutions also maintain high language requirements.

On the average, the English major devotes approximately 11 semester-hours to required studies in natural sciences and mathematics.

HUMANITIES: SPANISH; SPEECH AND DRAMA

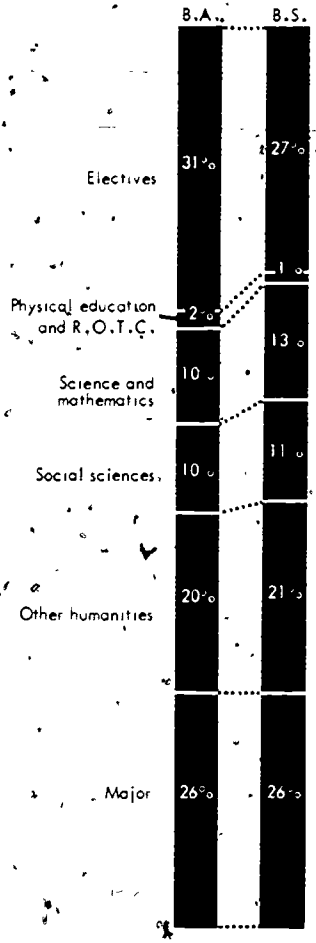

Figure 5.—*Mean percentage requirements for B.A. or B.S. curriculums in Spanish*

Summary of Findings

Preliminary findings show that, quantitatively at least, students majoring in humanities take less course work outside their disciplines than those majoring in the sciences. The report shows that humanities majors take up to two-thirds of all their courses in humanities, and an average of only 10 percent of their work in the sciences. Science majors take considerably larger percentages of their work in the humanities.

Requirements for majors in Spanish, and speech and drama are remarkably consistent. Majors in these fields account on the average for 26 percent of the total curriculum; except for the B.A. in speech and drama, where the mean percentage is 24.

Students majoring in one of the three humanities fields are required to take an additional humanities requirement amounting to roughly one-fifth of their degree program. Thus, nearly one-half of their 4-year undergraduate study is in the humanities.

PHYSICAL SCIENCES AND MATHEMATICS

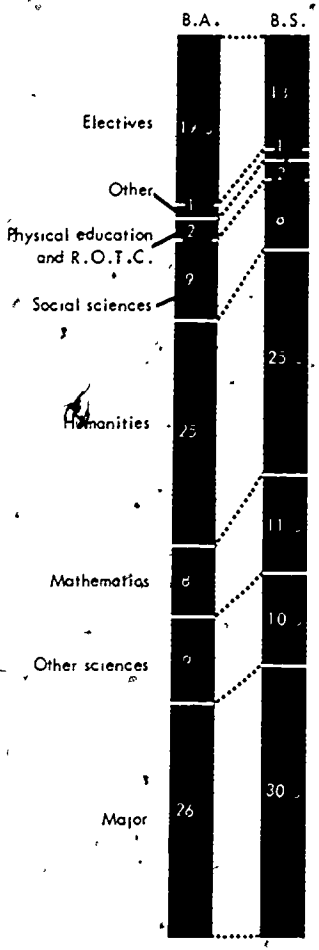

Figure 6.—*Mean percentage requirements for B.A. and B.S. curriculums in Chemistry*

Summary of Findings

In chemistry or physics, the total combined requirement in the physical and biological sciences and mathematics runs high, amounting to as much as 51 percent of the B.S. curriculum in chemistry.

The average requirement in mathematics was greater in the physics curriculum than in the chemistry curriculum, with a high of 15 percent for the B.S. in physics and a low of 8 percent for the B.A. in chemistry.

Each B.S. program had a larger requirement in science and mathematics than did the corresponding B.A. curriculum, with the B.A. programs having higher required components in the humanities and social sciences and more free electives.

Mathematics tends to be more in the liberal arts image than either chemistry or physics, with 81 percent of the responding institutions reporting they had a B.A. curriculum, and only 56 percent a B.S. curriculum, whereas in chemistry and physics there were more B.S. curriculums than B.A. curriculums. Furthermore, mathematics allowed for a larger amount of free electives than did either chemistry or physics.

SOCIAL SCIENCES

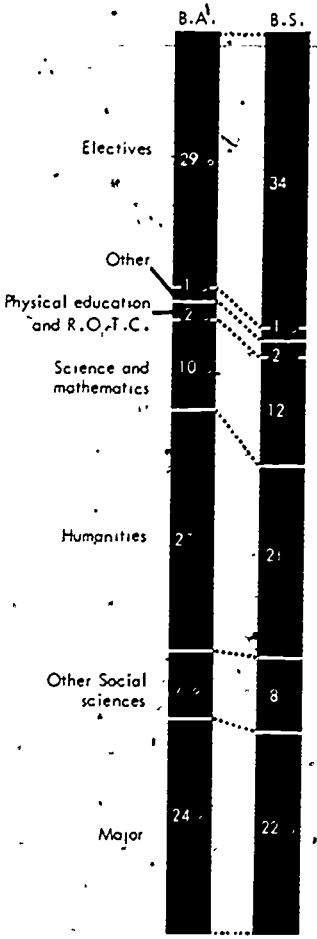

Figure 7.—*Mean percentage requirements for B.A. or B.S. curriculums in History*

Summary of Findings

In the social sciences, the B.S. curriculums account for only 15 to 19 percent of the total curriculums.

The mean percentage requirement for the major ranged from a low of 20 percent for the B.S. in political science to a high of 24 percent for the B.A. in history.

For a B.A. in sociology, institutional requirements for a major ranged from a low of 10 percent to a high of 39 percent of the total credits required.

The mean or average percentage of requirements for social science courses other than the major varied from a low of 7 percent for a B.A. in history, to a high of 12 percent for a B.S. in political science.

The percentage of electives in the social sciences ranged from a low of no electives to as much as 62 percent of one B.S. program in political science.

A total of 25 to 27 percent of the typical B.A. curriculum in the three social science fields was required in the humanities, thus exceeding the requirement for the major itself.

TABLE 13. — Summary table showing mean percents of total credits required in different areas of study for selected Bachelor of Arts curriculums: Aggregate United States, 1962-63

Selected curriculums	Major	Natural sciences	Mathematics	Humanities	Social sciences	Physical education and R.O.T.C.	Other	Electives
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
HUMANITIES								
English	28%	7%	2%	[1]22%	9%	2%	2%	29%
Spanish	26	8	2	[1]20	10	2	0	31
Speech and drama	24	7	2	[1]26	9	2	1	27
BIOLOGICAL SCIENCES								
Botany	[2]26	[3]9	3	21	9	2	1	29
General biology	[2]26	[3]12	3	26	9	2	1	21
Zoology	[2]26	[3]11	4	22	9	2	1	25
PHYSICAL SCIENCES AND MATHEMATICS								
Chemistry	26	[4]9	8	25	9	2	1	19
Physics	25	[4]6	[4]14	25	9	2	1	18
Mathematics	25	9	[5]	28	9	2	1	27
SOCIAL SCIENCES								
History	24	[6]	2	27	[7]	2	1	29
Political science	22	[6]	2	25	[7]11	2	1	28
Sociology	21	[6]	2	26	[7]10	2	2	28

[1] In humanities other than the major.
[2] Includes the major and other biological sciences.
[3] In natural sciences other than the biological sciences.
[4] In natural sciences other than the physical sciences.
[5] Recorded in column 2.
[6] In social sciences other than the major.

(*Note.* Because of rounding, sum of components may not equal 100 percent.)

TABLE 14. — Summary table showing mean percents of total credits required in different areas of study for selected Bachelor of Science curriculums: Aggregate United States, 1962-63

Selected curriculums	Major	Natural sciences	Mathematics	Humanities	Social sciences	Physical education and R.O.T.C.	Other	Electives
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
AGRICULTURE								
Agronomy	29%	27%	5%	10%	10%	3%	0%	15%
General agriculture	32	20	4	12	10	3	1	18
Agricultural education	39	17	3	10	13	4	3	11
Animal husbandry	32	23	4	11	10	3	1	16
Agricultural economics	24	16	6	10	20	1	4	19
ENGINEERING								
Aeronautical	47	14	14	12	5	2	1	3
Chemical	34	28	13	11	5	2	1	6
Civil	47	15	12	11	5	3	1	5
Electrical	43	14	13	12	6	2	2	8
Industrial	41	13	14	11	8	3	4	6
Mechanical	47	13	13	12	6	3	1	7
BIOLOGICAL SCIENCES								
Botany	26	12	4	20	9	3	1	25
General biology	25	13	4	25	8	1	1	21
Zoology	27	14	5	20	9	3	1	21
PHYSICAL SCIENCES AND MATHEMATICS								
Chemistry	39	10	11	25	8	2	1	13
Physics	27	7	15	24	8	3	1	16
Mathematics	28	12	(6)	24	8	3	1	27

Humanities[6]									
English	27	9	3	[7]18	8	2	3	30
Spanish	26	10	3	[7]21	11	1	0	27
Speech and drama	26	9	2	[7]20	9	2	1	31
Social sciences[8]								
History	22	9	3	21	[9]8	2	1	34
Political science	20	9	4	22	[9]12	2	1	29
Sociology	22	9	3	19	[9]9	2	2	23

[1] Includes requirements in all "engineering" courses. Of the 47 percent requirement in the aeronautical curriculum, 17 percent is specifically in aeronautical engineering, the remainder being in other engineering courses. The comparable components for the other curriculums in this table are: chemical, 11 percent; civil, 23 percent; electrical, 17 percent; industrial, 18 percent; and mechanical, 16 percent.

[2] Includes the major and other biological sciences.

[3] In natural sciences other than biological sciences.

[4] In natural sciences other than physical sciences.

[5] Recorded in column 2.

[6] The percentages shown for these disciplines are based on relatively small numbers of curriculums. (English, 23; Spanish, 12; Speech and Drama, 27; History, 36; Political Science, 32; Sociology, 42). See text for explanation of these small numbers of cases.

[7] In humanities other than in the major.

[8] In social sciences other than the major.

(*Note.* Because of rounding, sum of components may not equal 100 percent.)

APPENDIX

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION
WASHINGTON 25 D C

QUESTIONNAIRE.
AGRICULTURE

To the Dean and Director of Instruction, Agriculture.

Your institution is one of [illegible] selected for study to examine existing patterns in the undergraduate curriculums for students majoring in certain [illegible] fields. We feel sure you will agree that such a study is overdue, and the findings will be useful to academic administrators, faculty members, counsellors, and students.

The designation of the curriculum to be reported on this form is entered at the top of page 3. For that curriculum please report the credit units of all required and elective courses in the program for the baccalaureate degree.

In entering course credit units, use the "Definitions of Terms" even though they may not agree with the practice at your institution. The definitions are designed to facilitate comparisons with curriculums in other major fields of study. In Part II be sure to list the names of courses and in the appropriate column to the right enter the credit units for each course listed.

Return one completed form for each curriculum to be reported, using the postage-free envelopes. Your cooperation in completing the questionnaire and returning it promptly will be greatly appreciated by the Office of Education.

Sincerely yours,

Henry S. Brunner

R. Orin Cornett
Acting Assistant Commissioner
for Higher Education

Henry S. Brunner
Specialist for Agricultural Education
Division of Higher Education

DEFINITIONS OF TERMS

NATURAL SCIENCES & MATHEMATICS INCLUDE

1 Biological Sciences: BIOLOGY, general, BOTANY, general; ZOOLOGY, general, ANATOMY & HISTOLOGY; BACTERIOLOGY, VIROLOGY, MYCOLOGY, PARASITOLOGY, BIOCHEMISTRY, BIOPHYSICS, ENTOMOLOGY; GENETICS (including experimental plant and animal breeding), PATHOLOGY (including Plant Pathology), PHYSIOLOGY (including Plant Physiology); BIOLOGICAL SCIENCES, all other.

2 Physical Sciences: PHYSICAL SCIENCE, general (without specific major); ASTRONOMY, CHEMISTRY (excluding Biochemistry); METALLURGY (excluding Metallurgical Engineering), METEOROLOGY; PHYSICS, GEOLOGY, GEOPHYSICS (including Seismology), OCEANOGRAPHY, EARTH SCIENCES, all other, PHYSICAL SCIENCES, not classifiable above.

3 Mathematics & Statistics

SOCIAL SCIENCES INCLUDE

1 Basic: SOCIAL SCIENCES, general (without specific major), AMERICAN CIVILIZATION, AMERICAN CULTURE; ANTHROPOLOGY; AREA STUDIES, REGIONAL STUDIES, ECONOMICS (excluding Agricultural Economics), HISTORY, INTERNATIONAL RELATIONS, POLITICAL SCIENCE or GOVERNMENT, SOCIOLOGY, BASIC SOCIAL SCIENCES, all other.

2 Applied: AGRICULTURAL ECONOMICS, FOREIGN SERVICE PROGRAMS (consular and diplomatic service), INDUSTRIAL RELATIONS; PUBLIC ADMINISTRATION, BUSINESS ADMINISTRATION, SOCIAL WORK, SOCIAL ADMINISTRATION; APPLIED SOCIAL SCIENCES, all other.

HUMANITIES INCLUDE

1 Architecture (excluding Architectural Engineering).

2 English & Literature (including Comparative Literature).

3 Fine & Applied Arts, including ART, general (general curriculum without major specialization), MUSIC, including Sacred Music (excluding Music Education); SPEECH & DRAMATIC ARTS (excluding Speech Correction), FINE & APPLIED ARTS, other specific major fields, FINE & APPLIED ARTS, not further classified.

4 Foreign Languages & Literature, including LINGUISTICS (including Phonetics & Semantics), LATIN AND/OR GREEK, MODERN FOREIGN LANGUAGES including Chinese, French, German; Italian; Japanese; Philology and Literature of Germanic Languages; Philology and Literature of Romance Languages; Russian or other Slavic Languages, Spanish, Modern Foreign Languages, all other, FOREIGN LANGUAGES & LITERATURE, not classifiable above.

5 Philosophy, including Scholastic Philosophy.

6 Religion, including RELIGIOUS EDUCATION & BIBLE, THEOLOGY – curriculum leading specifically to first-professional (ministerial degree), THEOLOGY – master's and doctor's degrees only; RELIGION – liberal arts curriculum, nonsectarian, RELIGION, all other.

7 Humanities, general program (without major field).

8 Arts and Sciences, general program.

INSTRUCTIONS

A The data with respect to the number of credit units in the different areas of study will be tabulated finally for publication in terms of the range and the median percentage of the total requirements among the institutions reporting for each curriculum. The conversion to percentages will be made after data are received in this Office. In order that these calculations may be meaningful and comparable it is necessary to have both the length of the class hour and the number of hours used as the basis for a "credit unit" in each institution. A comparison of the practice in this respect will also be included in the report on this survey.

B. The parenthetic expression "estimate as typical case" is given as a direction on the assumption that on the basis of experience with a great number of students in a particular curriculum the head of a department or a student advisor can with some confidence present a picture of how most students in that curriculum use elective credits. Such data will show whether students are tending toward broader basic science preparation, toward further technical training in their specialized areas of interest, or whether any considerable proportion of them use elective credits in areas such as the fine arts or foreign language. If such an Estimate as a typical case" is not possible, enter elective credits as shown in your catalog by groups and subdivisions as specifically as possible. In any case, attach any applicable rules as to variables, distribution, and approval.

C. The accompanying definitions of "Natural Science," "Social Science," and "Humanities" will be used in all other sections of the curriculum patterns studies and will also serve in general as the basis for reporting on agricultural curriculums.

D In accordance with the practice established for the annual reporting of "Earned Degrees Conferred," credits devoted to psychology courses are to be reported in this separate Part I, Item 2b.

E. Report as communications all credits devoted to speech, journalism, scientific writing, radio or television. Foreign language courses should be reported separately in Part I, Item 3c.

F Credits devoted to courses such as "Survey of Agriculture for Freshmen" or survey courses offered by a department for a specific curriculum are generally considered orientation courses unless they include technical subject-matter.

G The term "Agricultural Technology" is used to encompass all the work contributing to the technical and applied scientific knowledge of the student (including Agribusiness). The proportion of such work devoted specifically to a major area as compared to the amount in related and supporting areas is an important consideration in curriculum construction.

PAGE 2

OE-SHE-63-A2 (6-62) DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE OFFICE OF EDUCATION WASHINGTON 25, D. C. BUDGET BUREAU NO. 51R-392 APPROVAL EXPIRES 6/15/63

CURRICULUM PATTERNS IN HIGHER EDUCATION
AGRICULTURE – 1962-63

Program leading to Baccalaureate Degree with a major in _____

(If "options" such as "Production," "Science," or "Business" are offered in this major, use a separate form for each option.)

NAME AND ADDRESS OF INSTITUTION | INSTITUTION CODE NO.

LENGTH OF PROGRAM — NO. OF YEARS _____ | NAME OF DEGREE GRANTED

DEFINITION OF CREDIT UNIT AT YOUR INSTITUTION (Check one)
- ☐ SEMESTER HOUR
- ☐ TRIMESTER HOUR
- ☐ QUARTER HOUR
- ☐ COURSE USED AS A UNIT
- ☐ OTHER (Specify) _____

A "CREDIT UNIT" AT THIS INSTITUTION REPRESENTS:

_____ (No.) LECTURE HOURS OF _____ (No.) MINUTES

– OR –

_____ (No.) LABORATORY HOURS OF _____ (No.) MINUTES

– OR –

A TERM OF _____ WEEKS. *(See instruction A)*

QUESTIONNAIRE: AGRICULTURE

PART I – CURRICULUM CONTENT

		UNITS IN BACCALAUREATE DEGREE					
		REQUIRED OF ALL STUDENTS IN AGRICULTURE		ADDITIONAL REQUIREMENTS IN THIS PARTICULAR CURRICULUM		ELECTIVES *(Est. or typical case)* *(See Inst. B)*	
		TOTAL	SUB-TOTAL	TOTAL	SUB-TOTAL	TOTAL	SUB-TOTAL
1	NATURAL SCIENCE *(See Instruction C)*						
	a Biological						
	b Physical						
	c Mathematics & Statistics						
2	SOCIAL SCIENCE *(See Instruction C)*						
	a Basic *(See definitions)*						
	b Applied *(See definitions)*						
3	PSYCHOLOGY *(See Instruction D)*						
4	HUMANITIES *(See Instruction C)*						
	a English						
	b Communications *(See Instruction E)*						
	c Foreign Language						
	d Fine & Applied Arts						
	e Philosophy & Religion						
5	AGRICULTURE						
	a Orientation *(See Instruction F)*						
	b Agricultural Technology *(See Instruction G)*						
	(1) In major area						
	(2) Supporting in other areas						
6	MILITARY SCIENCE & PHYSICAL EDUCATION						
7	TOTAL						
8	GRAND TOTAL *(Credit units for degree)*						

PAGE 8

PART II – CHANGES IN CURRICULUM

List in this column names of courses and in appropriate columns to the right enter the credit-units for these courses	CREDITS REQUIRED FOR ALL STUDENTS IN AGRICULTURE	ADDITIONAL CREDIT REQUIREMENTS THIS PARTICULAR CURRICULUM	ELECTIVE CREDITS
1 **CHANGES IN LAST 3 YEARS** (If no change occurred, check) →	☐	☐	☐
a. Courses and credit-units under present regulations but not under regulations of three years ago			
b. Courses and credit-units under regulations three years ago but not under present regulations			
2 **CHANGES NOW BEING PLANNED** (If no changes planned, check)	☐	☐	☐
a. Courses and credit-units not under present regulations but to be included within three years			
b. Courses and credit-units under present regulations but to be dropped within three years			

PART III – (Check one for each question)

		Yes	No
1 **PROVISIONS FOR SUPERIOR STUDENTS**			
a. During the past 10 years have any programs, courses or sections been provided specifically for superior students in this curriculum, either on a departmental or a college level? (If "YES," please describe on a separate sheet)	DEPARTMENTAL		
	COLLEGE		
2 **ASSOCIATE DEGREE AND RELATED PROGRAMS**			
a. Does your institution award an associate degree, certificate, diploma, or other award based upon completion of 2 years of academic study at the freshman-sophomore level?			
b. If "YES" will completion of the first two years of the 4-year curriculum reported in Part I meet the requirements for the associate degree, diploma, certificate, or other award at your institution?			
3 **ENGLISH COURSES**			
a. Are the required English courses reported in PART I, item 3a	SPECIAL COURSES FOR STUDENTS IN THIS CURRICULUM?		
	SPECIAL SECTIONS OF REGULAR ENGLISH COURSES?		
	REGULAR ENGLISH COURSES WITH NO SPECIAL TREATMENT?		
b. Are there any special features of the required English courses for this major curriculum (such as use of television, teaching machines or unusual teaching methods)? If "YES" please describe on a separate sheet.			

PERSON COMPLETING FORM (Name) (Title) (Telephone No. & Ext.)

Form OE-DHE 684-1(12-61)

Budget Bureau No. 51-R376
Approval Expires November 1, 1962

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Office of Education
Washington 25, D.C.

CURRICULUM PATTERNS IN HIGHER EDUCATION--(AN EXPLORATORY STUDY)

Programs Leading to the Baccalaureate Degree

ENGINEERING

QUESTIONNAIRE: ENGINEERING

When completed, one copy of this form should be returned to the Office of Education, using the enclosed franked mailing label, which requires no postage. Retain the second copy for your files.

Name of Institution

Information supplied by: _____ (Date) _____
(Name and Title)

To the Dean of Engineering:

This is one of a series of related forms leading to an exploratory study series covering eight major fields of education which account for approximately 80 percent of all baccalaureate degrees granted in the United States.

This study covers both accredited and unaccredited curriculums in the 18 fields of engineering, recognized by the Engineers' Council for Professional Development, in which at least 10 curriculums are offered. Institutions have been selected so as to get a reasonable distribution as to size, type, and geographic situation.

The fact that a limited number of institutions has been selected makes it especially important that the requested information be supplied for your institution.

The data on "credit units" reported by the institutions will be used as necessary to enable comparisons to be made between curriculums in the various fields of engineering, and also between engineering curriculums and those in the other seven major fields of education.

Your cooperation in completing the questionnaire and returning it promptly will be greatly appreciated by the Office of Education.

Sincerely yours,

R. Orin Cornett
Acting Assistant Commissioner for Higher Education

Henry H. Armsby
Specialist for Curriculum Patterns in Engineering Education

(Curriculum Patterns in Higher Education--Engineering) 2

CURRICULUM _____

Please check description which fits this curriculum:
☐ Four Year, ☐ Five Year, ☐ Cooperative

Is it accredited by Engineers' Council for Professional Development? _____ Yes or No

CREDIT UNITS IN BACCALAUREATE PROGRAM

Please report as of the Academic Year 1961-62

The "credit unit" in use in this institution is (check one): ☐ Semester Hour, ☐ Quarter Hour, ☐ Trimester Hour, ☐ Course, ☐ Other (specify)

This "credit unit" represents ___ class hours per week, or ___ laboratory hours per week, for ___ weeks.

QUESTIONNAIRE: ENGINEERING

Academic Year 19__	Total "Credit Units" required in this curriculum
I. REQUIRED COURSES	
A. Natural Sciences and Mathematics (total)	___
1. Chemistry	___
2. Physics	___
3. Mathematics (includes statistics)	___
4. Biological Sciences	___
5. Other courses in Natural Sciences (Specify on separate sheet)	___
B. Social Science[1]	xxx
C. Humanities[1]	xxx
1. English	___
2. Other courses in Humanities	___
D. Engineering	
1. Engineering Science[2]	xxx
2. Engineering Analysis and Design[3]	xxx
a. In major department	___
b. In other departments	___
E. ROTC and Physical Education	xxx
F. Other Required Subjects (Specify on separate sheet)	xxx
TOTAL FOR REQUIRED COURSES	xxx
II. ELECTIVE COURSES[4]	xxx
III. TOTAL CREDIT UNITS IN DEGREE PROGRAM	xxx

IV. CHANGES IN REQUIREMENTS

A. Recent Changes

Have important changes in the distribution of credit units reported above been made during last 5 years? Yes ☐ or No ☐

If yes, please give details on a separate sheet.

B. Future Changes

Are important changes definitely planned for next 3 years? Yes ☐ or No ☐

If yes, please give details on a separate sheet.

V. ASSOCIATE DEGREE AND RELATED PROGRAMS

1. Does your institution award an associate degree, certificate, diploma, or other award based upon completion of 2 years of academic study at the freshman-sophomore level? Yes ☐ or No ☐

2. If yes, will the completion of the first two years of the curriculum outlined above satisfy requirements for the associate degree, diploma, certificate, or other award in your institution? Yes ☐ or No ☐

VI. ENGLISH COURSES

1. Are the required courses in English reported above:
   a. Special courses for students in engineering? ☐
   b. Special sections of the regular English courses? ☐
   c. Regular English courses with no special treatment? ☐

2. Are there any special features of required English courses for this curriculum (such as use of television, teaching machines, or unusual teaching methods)? Yes ☐ No ☐ If yes, please describe on separate sheet.

QUESTIONNAIRE ENGINEERING

1/ For the purposes of this study and in order to facilitate comparisons of curriculum patterns in the major fields of education, the subdivisions of Social Science and of Humanities listed on page 4 will be used. They are in agreement with the subdivisions used by the Office of Education in its annual circular "Earned Degrees Conferred."

Subjects not listed in either list above or in the table should be reported under "Other Required Subjects" if required for the degree, or under "Electives" if not required.

2/ As listed in the American Society for Engineering Education "Report on Evaluation of Engineering Education," viz: 1. Mechanics of solids (statics, dynamics, and strength of materials); 2. Fluid mechanics; 3. Thermodynamics; 4. Transfer and rate mechanisms (heat, mass, and momentum transfer); 5. Electrical theory (fields, circuits, and electronics); 6. Nature and properties of materials (relating particle and aggregate structure to properties).

3/ As discussed in the American Society for Engineering Education "Report on Evaluation of Engineering Education."

4/ On a separate sheet describe rules as to distribution, concentration, etc., and state whose approval is required for electives to count toward degree.

(Curriculum Patterns in Higher Education -- Engineering) 4.

DEFINITION OF "SOCIAL SCIENCE" AND "HUMANITIES"

For the purpose of this study and in order to facilitate comparisons of curriculum patterns in the major fields of education, the following subdivisions of Social Science and of Humanities will be used. They are in agreement with the subdivisions used by the Office of Education in its annual circular "Earned Degrees Conferred."

SOCIAL SCIENCE includes

Basic. Social Sciences, general (without specific major), American Civilization, American Culture, Anthropology, Area Studies, Regional Studies, Economics (excluding Agricultural Economics), History, International Relations, Political Science or Government; Sociology; Basic Social Sciences, all other.

Applied. Agricultural Economics; Foreign Service Programs (consular and diplomatic service), Industrial Relations; Public Administration; Social Work, Social Administration, Applied Social Sciences, all other.

HUMANITIES include

Architecture (excluding Architectural Engineering).

English and Literature (including Comparative Literature).

Fine and Applied Arts, including Art, general (general curriculum without major specialization), Music, including Sacred Music (excluding Music Education); Speech and Dramatic Arts (excluding Speech Correction), Fine and Applied Arts, other specific major fields, Fine and Applied Arts, not further classified.

Foreign Languages and Literature, including Linguistics (including Phonetics and Semantics), Latin and/or Greek; Modern Foreign Languages including Chinese; French; German, Italian, Japanese, Philology and Literature of Germanic Languages; Philology and Literature of Romance Languages, Russian or other Slavic Languages, Spanish, Modern Foreign Languages, all other, Foreign Languages and Literature, not classifiable above.

Philosophy, including Scholastic Philosophy.

Religion including Religious Education and Bible, Theology (curriculum leading specifically to first-professional ministerial degree), Theology--master's and doctor's degrees only, Religion--liberal arts curriculum, nonsectarian; Religion, all other.

Arts, General program (without major field).

Arts and Sciences, general program.

SUBJECTS NOT LISTED in either list above or in the table should be reported under "Other Required Subjects" if required for the degree; or under "Electives" if not required.

QUESTIONNAIRE. ENGINEERING

OE-BHE 684-6 (4-62) DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE OFFICE OF EDUCATION WASHINGTON 25 D C BUDGET BUREAU NO 51 R388 APPROVAL EXPIRES JUNE 15, 1963

CURRICULUM PATTERNS IN HIGHER EDUCATION

Programs Leading to Baccalaureate Degree with a Major in

(FOR ACADEMIC YEAR 1962-63)

NAME OF PERSON COMPLETING FORM
TITLE
TELEPHONE NO & EXTENSION

QUESTIONNAIRE. SOCIAL SCIENCES

To the Dean

Your institution is among a group selected for study to determine existing patterns in the undergraduate curriculum for students majoring in certain subject fields. We feel sure you will agree that such a study is overdue, and that the findings will be valuable to academic administrators, faculty members, counselors, and students.

If you are not the appropriate person to supply this information, please refer this form to the departmental chairman or other responsible person. The major field whose curriculum is to be described on this form is designated at the top of this page. For that field, please report the credit units for all required and elective courses for each baccalaureate degree offered.

In entering course credit units, use the "Definition of Terms" even though they may not agree with the practices at your institution. The definitions are designed to facilitate comparisons of curriculum patterns in the major fields of study. In Part II be sure to list the names of courses and in the appropriate column to the right enter the credit units for each course listed. Part IV is for explanations of items not applicable to your program, e.g., if your curriculum does not fit the pattern illustrated in Part I. Return one completed form for each major field reported, using postage-free envelopes. Your cooperation in completing the questionnaire and returning it promptly will be greatly appreciated by the Office of Education.

Sincerely yours,

Donald F. Warner

R. Orin Cornett
Acting Assistant Commissioner
For Higher Education

Donald F. Warner
Specialist for Social Sciences
Division of Higher Education

DEFINITION OF CREDIT UNIT AT YOUR INSTITUTION (check one)

- ☐ Semester Hour
- ☐ Trimester Hour
- ☐ Quarter Hour
- ☐ Course used as a Unit
- ☐ Other (specify): _____

A "Credit Unit" at this institution represents:

_____ (No.) LECTURE HOURS PER WEEK

_____ (No.) LABORATORY HOURS PER WEEK FOR _____ WEEKS

SOCIAL SCIENCES

DEFINITIONS OF TERMS

•• NATURAL SCIENCES & MATHEMATICS INCLUDE: ••

1. Biological Sciences: BIOLOGY, general; BOTANY, general; ZOOLOGY, general; ANATOMY & HISTOLOGY; BACTERIOLOGY, VIROLOGY; ECOLOGY; PARASITOLOGY; BIOCHEMISTRY; BIO[illegible]; ENTOMOLOGY; GENETICS (including [illegible] plant & animal breeding); PATHOLOGY (including Plant Pathology); PHYSIOLOGY (including Plant Physiology); BIOLOGICAL SCIENCES, all other.

2. Physical Sciences: PHYSICS, general (without specific major); ASTRONOMY; CHEMISTRY (excluding Biochemistry; METALLURGY (excluding Metallurgical Engineering); METEOROLOGY; PHYSICS; GEOLOGY; GEOPHYSICS (including Seismology); OCEANOGRAPHY; EARTH SCIENCES, all other; PHYSICAL SCIENCES, not classifiable above.

3. Mathematics & Statistics

•• SOCIAL SCIENCES INCLUDE: ••

1. Basic: SOCIAL SCIENCES, general (without specific major); AMERICAN CIVILIZATION, AMERICAN CULTURE; ANTHROPOLOGY; AREA STUDIES, REGIONAL STUDIES; ECONOMICS (excluding Agricultural Economics); HISTORY; INTERNATIONAL RELATIONS; POLITICAL SCIENCE OR GOVERNMENT; SOCIOLOGY; BASIC SOCIAL SCIENCES, all other.

2. Applied: AGRICULTURAL ECONOMICS; FOREIGN SERVICE PROGRAMS (Consular & Diplomatic Service); INDUSTRIAL RELATIONS; PUBLIC ADMINISTRATION; SOCIAL WORK, SOCIAL ADMINISTRATION; APPLIED SOCIAL SCIENCES, all other.

•• HUMANITIES INCLUDE: ••

1. Architecture (excluding Architectural Engineering).

2. English & Literature (including Comparative Literature).

3. Fine & Applied Arts, including Art, general (general curriculum without major specialization); MUSIC, including Sacred Music (excluding Music Education); Speech & Dramatic Arts (excluding Speech Correction); FINE & APPLIED ARTS, other specific major fields; FINE & APPLIED ARTS, not further classified.

4. Foreign Languages & Literature, including Linguistics (including Phonetics & Semantics); LATIN; GREEK; MODERN FOREIGN LANGUAGES including Chinese; French, German, Italian, Japanese; Philology & Literature of Germanic Languages; Philology & LitePature of Romance Languages; Russian or other Slavic languages; Spanish; Modern foreign languages; all other; [illegible] LANGUAGES & LITERATURE not classifiable above.

5. Philosophy, including Scholastic Philosophy.

6. Religion, including Religious Education & Bible; THEOLOGY (curriculum leading specifically to first-professional ministerial degree); RELIGION, liberal arts curriculum, nonsectarian; Religion, all other.

7. Arts, general program (without major field).

8. Arts and Sciences, general program

QUESTIONNAIRE. SOCIAL SCIENCES

..... INSTRUCTIONS .....

1. List normal requirements, even where these may be waived by secondary school credits, special examination, etc.

2. When credit units are variable indicate the range (e.g. Humanities, 12-16 credits).

3. If there is a divisional requirement (e.g., Social Science, 18 credits) without individual subjects being specified, record this figure as a total and omit subtotal breakdown.

4. Where divisional requirements include subjects not listed in the divisional breakdown, enter these credit units on line for specified divisional requirements not listed.

5. If there is a divisional requirement which is partly specified (e.g., Social Science, 18 credits of which 6 credits shall be in History) record both the specified & unspecified credit units in the appropriate blanks in the subtotal column. The sum of the subtotals should equal the total in each instance.

6. In cases of combined divisional requirements (e.g., Social Science and/or Humanities, 18 credits show range (e.g., 0 – 18) for each division, and add "C.R." (Combined Requirements) in same space.

Please use the "DEFINITIONS OF TERMS" above even though they may not agree with the practices at your institution. The definitions are designed to facilitate comparisons of curriculum patterns in the major fields of study. Degree requirements not listed under definitions should be listed under PART V, ITEM 11.

PART I – CREDIT UNITS FOR GRADUATION AS OF ACADEMIC YEAR 1962-63

Check if degree is not given for major →

LIST ONLY CREDIT UNITS BELOW

I REQUIRED COURSES	NON-TEACHER PREPARATORY MAJORS: B.S. DEGREE ☐ TOTAL	B.S. DEGREE ☐ SUB TOTAL	B.A. DEGREE ☐ TOTAL	B.A. DEGREE ☐ SUB TOTAL	TEACHER PREP. MAJORS (SPECIFY DEGREE OF ED.) ☐ TOTAL	TEACHER PREP. MAJORS (SPECIFY DEGREE OF ED.) ☐ SUB TOTAL
a NATURAL SCIENCES						
Biological Sciences						
Physical Sciences						
Specific Natural Science Requirements Not Listed Above						
Unspecified Natural Science Requirements						
b MATHEMATICS & STATISTICS						
c HUMANITIES						
English & Literature						
Foreign Language & Literature						
Specific Humanities Requirements Not Listed Above						
Unspecified Humanities Requirements						
d SOCIAL SCIENCES						
Economics						
History						
Political Science (government)						
Sociology						
Interdepartmental Courses						
Specific Social Science Requirements Not Listed Above						
Unspecified Social Science Requirements						
e GEOGRAPHY						
f PSYCHOLOGY						
g *EDUCATION						
h ROTC & PHYSICAL EDUCATION (If no credit given, enter "NC")						
i LIST TITLES & CREDIT UNITS OF ANY OTHER REQUIRED SUBJECTS NOT LISTED ABOVE (INCLUDE INTERDISCIPLINARY COURSES)						

1	TOTAL CREDIT UNITS FOR REQUIRED COURSES					
2	CREDIT UNITS FOR ALL ELECTIVE COURSES					
	a. Credits in Elected Minor Field					
	b. All other Elected Courses					
3	TOTAL CREDIT UNITS REQUIRED FOR GRADUATION (This should equal the sum of item 1, plus item 2 — if not, explain)					

PART II - CHANGES IN CURRICULUM (Required Courses) LIST ONLY COURSE NAMES IN THIS PART	LIST ONLY CREDIT UNITS BELOW		
	NON-TEACHER PREPARATORY MAJORS		TEACHER PREP. MAJORS
	B.S DEGREE	B.A DEGREE	SPECIFY DEGREE (EVEN,
1 CHANGES IN LAST 3 YEARS (see items a & b) Check here → If no change occurred for this major	☐	☐	☐
a. COURSES NOW REQUIRED BUT NOT SO REQUIRED			
b. COURSES FORMERLY REQUIRED BUT NOT NOW REQUIRED			
2 CHANGES NOW BEING PLANNED (see items a & b) Check here → If no change is planned for this major	☐	☐	☐
a. COURSES TO BE REQUIRED (INCLUDE COURSES FORMERLY OFFERED AS ELECTIVES BUT NOT PREVIOUSLY REQUIRED)			
b. COURSES NOW REQUIRED BUT TO BE DROPPED FROM REQUIREMENTS			

(OVER)

	PART III – (Check one for each question)	YES	NO
1	PROVISIONS FOR THE SUPERIOR STUDENT		
a	During the past 10 years, has your department initiated or participated in specific programs, courses, or sections for superior students?		
2	ASSOCIATE DEGREE AND RELATED PROGRAMS		
a	Does your institution award an associate degree, certificate, diploma, or other award based upon completion of 2 years of academic study at the freshman-sophomore level?		
b	If yes, will the completion of the first two years of the 4-year curriculum reported in PART I meet the requirements for the associate degree, diploma, certificate, or other award at your institution?		
3	ENGLISH COURSES		
a	Are the required English courses reported in PART I	SPECIAL COURSES FOR STUDENTS IN THIS MAJOR CURRICULUM?	
		SPECIAL SECTIONS OF REGULAR ENGLISH COURSES?	
		REGULAR ENGLISH COURSES WITH NO SPECIAL TREATMENT?	
b	Are there any special features in the required English courses for this major curriculum (such as television, teaching machines, or unusual methods)?		
c	If yes to item 3a, describe		

QUESTIONNAIRE: SOCIAL SCIENCES

PART IV

EXPLANATION OF ITEMS NOT APPLICABLE TO YOUR PROGRAM (e.g., IF YOUR CURRICULUM DOES NOT FIT THE PATTERN ILLUSTRATED IN PART I. *(Include any specific requirements for graduation not covered in Part I, such as comprehensive examinations, senior thesis, etc.)*

OE-6HE-444.5 (4-62) DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE OFFICE OF EDUCATION WASHINGTON 25 D C BUDGET BUREAU NO 51-R384 APPROVAL EXPIRES JUNE 15 1963

CURRICULUM PATTERNS IN HIGHER EDUCATION
Programs Leading to Baccalaureate Degree with a Major in

(FOR ACADEMIC YEAR 1962-63)

NAME OF PERSON COMPLETING FORM
TITLE
TELEPHONE NO & EXTENSION

QUESTIONNAIRE: BIOLOGICAL SCIENCES, PHYSICAL SCIENCES, AND MATHEMATICS

To the Dean

Your institution [illegible] of a group selected for study to determine existing patterns in the undergraduate curriculum for students majoring in certain subject fields. We feel sure you will agree that such a study is overdue, and that the findings will be [illegible] to academic administrators, faculty members, counselors, and students.

If you are not the appropriate person to supply this information, please refer this form to the department chairman or other responsible person. The major field whose curriculum is to be described on this form is designated at the top of this page. For that field, please report the credit units of all required and elective courses for each baccalaureate degree offered.

In entering course credit units, use the "Definitions of Terms" even though they may not agree with the practices at your institution. These definitions are designed to facilitate comparisons of curricular patterns in the major fields of study. In Part II be sure to list the names of courses in the appropriate column to the right enter the credit units for each course listed. Part III is for explanations of items not applicable to your program, e.g., if your curriculum does not fit the pattern illustrated in Part I. Return one completed form for each major field reported, using postage-free envelopes. Your cooperation in completing the questionnaire and returning it promptly will be greatly appreciated by the Office of Education.

Sincerely yours,

Clarence B. Lindquist

Clarence B. Lindquist
Specialist for Mathematics and Science
Division of Higher Education

R. Orin Cornett
Acting Assistant Commissioner
For Higher Education

DEFINITION OF CREDIT UNIT AT YOUR INSTITUTION (check one)

- ☐ Semester Hour
- ☐ Trimester Hour
- ☐ Quarter Hour
- ☐ Course used as a Unit
- ☐ Other (specify) _____

A "Credit Unit" at this institution represents:

_____ (No.) LECTURE HOURS PER WEEK

_____ (No.) LABORATORY HOURS PER WEEK FOR _____ WEEKS

PHYSICAL & BIOLOGICAL SCIENCES

QUESTIONNAIRE: BIOLOGICAL SCIENCE, PHYSICAL SCIENCE, AND MATHEMATICS

DEFINITIONS OF TERMS

•• NATURAL SCIENCES & MATHEMATICS INCLUDE: ••

1. Biological Sciences: ZOOLOGY; [illegible] BOTANY; general; [illegible] general; HISTOLOGY; BACTERIOLOGY, MICROBIOLOGY; PARASITOLOGY; BIOCHEMISTRY; BIOPHYSICS; ENTOMOLOGY; GENETICS (including experimental plant & animal breeding); [illegible]GY (including Plant Pathology); PHYSIOLOGY (including Plant Physiology); BIOLOGICAL SCIENCES, all other.

2. Physical Sciences: PHYSICAL SCIENCES (general without specific major); ASTRONOMY; CHEMISTRY (excluding Biochemistry); METALLURGY (excluding Metallurgical Engineering); METEOROLOGY; PHYSICS; GEOLOGY; GEOPHYSICS (including Seismology); OCEANOGRAPHY; EARTH SCIENCES, all other; PHYSICAL SCIENCES, not classifiable above.

3. Mathematics & Statistics

•• SOCIAL SCIENCES INCLUDE: ••

1. Basic: SOCIAL SCIENCES, general (without specific major); AMERICAN CIVILIZATION, AMERICAN CULTURE; ANTHROPOLOGY; AREA STUDIES; REGIONAL STUDIES; ECONOMICS (excluding Agricultural Economics); HISTORY; INTERNATIONAL RELATIONS; POLITICAL SCIENCE OR GOVERNMENT; SOCIOLOGY; BASIC SOCIAL SCIENCES, all other.

2. Applied: AGRICULTURAL ECONOMICS; FOREIGN SERVICE PROGRAMS (Consular & Diplomatic Service); INDUSTRIAL RELATIONS; PUBLIC ADMINISTRATION; SOCIAL WORK, SOCIAL ADMINISTRATION; APPLIED SOCIAL SCIENCES, all other.

•• HUMANITIES INCLUDE: ••

1. Architecture (excluding Architectural Engineering).

2. English & Literature (including Comparative Literature).

Fine & Applied Arts, including Art, general (general curriculum without major specialization); MUSIC, including Sacred Music (excluding Music Education); Speech & Dramatic Arts (excluding Speech Correction); FINE & APPLIED ARTS, other specific major fields; FINE & APPLIED ARTS, not further classified.

Foreign Languages & Literature, including Linguistics (including Phonetics & Semantics); LATIN AND/OR GREEK; MODERN FOREIGN LANGUAGES (including Chinese; French; German; Italian; Japanese; Philology & Literature of Germanic Languages; Philology & Literature of Romance Languages; Russian or other Slavic languages; Spanish; Modern foreign languages, all other; FOREIGN LANGUAGES & LITERATURE not classifiable above.

5. Philosophy, [illegible] Scholastic Philosophy.

6. Religion, including Religious Education & [illegible]; THEOLOGY (curriculum leading specifically to first-professional ministerial degree); RELIGION, liberal arts curriculum, nonsectarian; Religion, all other.

7. Arts, general program (without major field).

8. Arts and Sciences, general program

UNDERGRADUATE CURRICULUM PATTERNS

..... INSTRUCTIONS .....

1. List normal requirements, even where these may be waived by secondary school credits, special examination, etc.

2. When credit units are variable indicate the range (e.g. Humanities, 12-16 credits).

3. If there is a divisional requirement (e.g., Social Science, 18 credits) without individual subjects being specified, record this figure as a total and omit subtotal breakdown.

4. Where divisional requirements include subjects not listed in the divisional breakdown, enter these credit units on line for specified divisional requirements not listed.

5. If there is a divisional requirement which is partly specified (e.g., Social Science, 18 credits of which 6 credits shall be in History) record both the specified & unspecified credit units in the appropriate blanks in the subtotal column. The sum of the subtotals should equal the total in each instance.

6. In cases of combined divisional requirements (e.g., Social Science and/or Humanities, 18 credits show range (e.g., 0 - 18) for each division, and add "C.R." (Combined Requirements) in same space.

Please use the DEFINITIONS OF TERMS above even though they may not agree with the practices at your institution. The definitions are designed to facilitate comparisons of curriculum patterns in the major fields of study. Degree requirements not listed under definitions should be listed under PART I ITEM 7.

QUESTIONNAIRE: BIOLOGICAL SCIENCES, PHYSICAL SCIENCE, AND MATHEMATICS

PART I - CREDIT UNITS FOR GRADUATION OF ACADEMIC YEAR 1962-63

Check if degree not given for this

	REQUIRED COURSES	LIST ONLY CREDIT UNITS BELOW: NON-TEACHER PREPARATORY MAJORS — B Sc. DEGREE TOTAL	B Sc. DEGREE SUB TOTAL	B A DEGREE TOTAL	B A DEGREE SUB TOTAL	TEACHER PREP. MAJORS (SPECIFY DEGREE GIVEN) TOTAL	SUB TOTAL
a	BIOLOGICAL SCIENCES (For those completing form for majors in Chemistry, Physics, or Mathematics give the general total and omit Biological Science breakdown below)						
	Biology (principles course) required of all majors						
	Botany courses required of all majors						
	Zoology courses required of all majors						
	Specific Biological Science requirements not listed above						
	Unspecified Biological Science requirements						
b	PHYSICAL SCIENCES						
	Chemistry						
	Physics						
	Specific Physical Science requirements not listed above						
	Unspecified Physical Science requirements						
c	MATHEMATICS & STATISTICS						
d	HUMANITIES						
	English & Literature						
	Foreign Language & Literature						
	Specific Humanities requirements not listed above						
	Unspecified Humanities requirements						
e	SOCIAL SCIENCES						
	History						
	Political Science (Government)						
	Specific Social Science requirements not listed above						
	Unspecified Social Science requirements						
f	GEOGRAPHY						
g	PSYCHOLOGY						
h	EDUCATION						
	ROTC & PHYSICAL EDUCATION (If no credit given, enter "NO")						
i	LIST TITLES & CREDIT UNITS OF ANY OTHER REQUIRED SUBJECTS NOT LISTED ABOVE (INCLUDE INTERDISCIPLINARY						

	COURSES)					
	TOTAL CREDIT UNITS FOR REQUIRED COURSES					
2	CREDIT UNITS FOR ALL ELECTIVE COURSES					
	a Credits in Elected Minor Field					
	b All other Elected Courses					
3	TOTAL CREDIT UNITS REQUIRED FOR GRADUATION *(This should equal the sum of item 1h plus item 2 If not, explain)*					

PART II CHANGES IN CURRICULUM (Required Courses) *LIST ONLY COURSES IN THIS COLUMN*	LIST ONLY CREDIT UNITS BELOW		
	NON-TEACHER PREPARATORY MAJORS		TEACHER PREP. MAJORS
	B.S. DEGREE	B.A. DEGREE	SPECIFY DEGREE GIVEN
1 CHANGES IN LAST 3 YEARS *(See items a & b Check here → if no change occurred for this major)*	☐	☐	☐
a COURSES NOW REQUIRED BUT FORMERLY NOT SO REQUIRED			
b COURSES FORMERLY REQUIRED BUT NOT SO REQUIRED			
2 CHANGES NOW BEING PLANNED *(See items a & b Check here → if no change is planned for this major)*	☐	☐	☐
a COURSES TO BE REQUIRED (INCLUDE COURSES FORMERLY OFFERED AS ELECTIVES BUT NOT PREVIOUSLY REQUIRED)			
b COURSES NOW REQUIRED BUT TO BE DROPPED FROM REQUIREMENTS			

(OVER)

		PART III - (Check one for each question)	YES	NO
1	PROVISIONS FOR THE SUPERIOR STUDENT			
	a	During the past 10 years has your department initiated or participated in specific programs, courses, or sections for superior students?		
2	ASSOCIATE DEGREE AND RELATED PROGRAMS			
	a	Does your institution award an associate degree, certificate, diploma, or other award based upon completion of 2 years of academic study at the freshman-sophomore level?		
	b	If yes, will the completion of the first two years of the 4-year curriculum reported in PART I meet the requirements for the associate degree, diploma, certificate, or other award at your institution?		
3	ENGLISH COURSES			
	a	Are the required English courses reported in PART I: SPECIAL COURSES FOR STUDENTS IN THIS MAJOR CURRICULUM?		
		SPECIAL SECTIONS OF REGULAR ENGLISH COURSES?		
		REGULAR ENGLISH COURSES WITH NO SPECIAL TREATMENT?		
	b	Are there any special features of the English courses for this major curriculum (such as [illegible], teaching [illegible], or unusual methods)?		
	c	If yes in item 3b, describe:		

EXPLANATION OF ITEMS NOT APPLICABLE OR PROGRAMS IN YOUR CURRICULUM WHICH DO NOT FIT THE PATTERN ILLUSTRATED IN PART I. (Include any [illegible] required for graduation not covered in Part I, such as comprehensive examinations, senior thesis, etc.)

QUESTIONNAIRE: BIOLOGICAL SCIENCES, PHYSICAL SCIENCE, AND MATHEMATICS

OE-BHE 664-7 (4-62)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION
WASHINGTON, 25, D.C.

BUDGET BUREAU NO 51-R388
APPROVAL EXPIRES JUNE 15 1963

CURRICULUM PATTERNS IN HIGHER EDUCATION

Programs Leading to Baccalaureate Degree with a Major in

_____

(FOR ACADEMIC YEAR 1962-63)

NAME OF PERSON COMPLETING FORM
TITLE
TELEPHONE NO & EXTENSION

QUESTIONNAIRE: HUMANITIES

To the Dean

Your institution is one of a group selected for study to determine existing patterns in the undergraduate curriculum for students majoring in certain subject fields. We feel sure you will agree that such a study is overdue, and that the findings will be valuable to academic administrators, faculty members, counselors, and students.

If you are not the appropriate person to supply this information, please refer this form to the departmental chairman or other responsible person. The major field whose curriculum is to be described on this form is designated at the top of this page. For that field, please report the credit units for required and elective courses for each baccalaureate degree offered.

In entering course credit units, use the "Definitions of Terms" even though they may not agree with the practices at your institution. The definitions are designed to facilitate comparisons of curriculum patterns in the major fields of study. In Part II be sure to list the names of courses and in the appropriate column to the right enter the credit units for each course listed. Part IV is for explanations of items not applicable to your program, e.g., if your curriculum does not fit the pattern illustrated in Part I. Return one completed form for each major field reported, using postage-free envelopes. Your cooperation in completing the questionnaire and returning it promptly will be greatly appreciated by the Office of Education.

Sincerely yours,

R. Orin Cornett
Acting Assistant Commissioner
For Higher Education

Chester L. Neudling
Chester L. Neudling
Specialist for the Humanities
Division of Higher Education

DEFINITION OF CREDIT UNIT AT YOUR INSTITUTION *(check one)*

- ☐ Semester Hour
- ☐ Trimester Hour
- ☐ Quarter Hour
- ☐ Course used as a Unit
- ☐ Other *(specify)* _____

A "Credit Unit" at this institution represents:

_____ (No.) LECTURE HOURS PER WEEK

_____ (No.) LABORATORY HOURS PER WEEK FOR _____ WEEKS

DEFINITIONS OF TERMS

•• NATURAL SCIENCES & MATHEMATICS INCLUDE: ••

1. Biological Sciences: BIOLOGY, general; BOTANY, general; ZOOLOGY, general; ANATOMY & HISTOLOGY; BACTERIOLOGY, VIROLOGY; PARASITOLOGY; BIOCHEMISTRY; BIOPHYSICS; ENTOMOLOGY; GENETICS (including experimental plant & animal breeding); PATHOLOGY (including Plant Pathology); PHYSIOLOGY (including Plant Physiology); BIOLOGICAL SCIENCES, all other.

2. Physical Sciences: PHYSICAL SCIENCES, general (without specific major); ASTRONOMY; CHEMISTRY (excluding Biochemistry); METALLURGY (including Metallurgical Engineering); METEOROLOGY; PHYSICS; GEOLOGY; GEOPHYSICS (including Seismology); OCEANOGRAPHY, EARTH SCIENCES, all other; PHYSICAL SCIENCES, not classifiable above.

3. Mathematics & Statistics

•• SOCIAL SCIENCES INCLUDE: ••

1. Basic: SOCIAL SCIENCES, general (without specific major); AMERICAN CIVILIZATION, AMERICAN CULTURE; ANTHROPOLOGY; AREA STUDIES, REGIONAL STUDIES; ECONOMICS (excluding Agricultural Economics); HISTORY; INTERNATIONAL RELATIONS; POLITICAL SCIENCE OR GOVERNMENT; SOCIOLOGY; BASIC SOCIAL SCIENCES, all other.

2. Applied: AGRICULTURAL ECONOMICS; FOREIGN SERVICE PROGRAMS (Consular & Diplomatic Service); INDUSTRIAL RELATIONS; PUBLIC ADMINISTRATION; SOCIAL WORK, SOCIAL ADMINISTRATION; APPLIED SOCIAL SCIENCES, all other.

•• HUMANITIES INCLUDE: ••

1. Architecture (excluding Architectural Engineering).

2. English & Literature (including Comparative Literature).

3. Fine & Applied Arts, including Art, general (general curriculum without major specialization); MUSIC, including Sacred Music (excluding Music Education); Speech & Dramatic Arts (excluding Speech Correction), FINE & APPLIED ARTS, other specific major fields; FINE & [illegible] ARTS, not further classified.

4. Foreign Languages & Literature, including Linguistics (excluding Phonetics & Semantics); LATIN AND/OR GREEK; MODERN FOREIGN LANGUAGES (including Chinese; French; German; Italian; Japanese; Philology & Literature of Germanic Languages; Philology & Literature of Romance Languages; Russian or other Slavic languages; Spanish; Modern foreign languages, all other; FOREIGN LANGUAGES & LITERATURE, not classifiable above.

5. Philosophy, including Scholastic Philosophy.

6. Religion, including Religious Education & Bible; THEOLOGY (curriculum leading specifically to first-professional ministerial degree); RELIGION, liberal arts curriculum, nonsectarian; Religion, all other.

7. Arts, general program (without major field).

8. Arts and Sciences, general program

***** INSTRUCTIONS *****

1. List normal requirements, even where these may be waived by secondary school credits, special examination, etc.

2. When credit units are variable indicate the range (e.g. Humanities, 12-16 credits).

3. If there is a divisional requirement (e.g., Social Science, 18 credits) without individual subjects being specified, record this figure as a total and omit subtotal breakdown.

4. Where divisional requirements include subjects not listed in the divisional breakdown, enter these credit units on line for specified divisional requirements not listed.

5. If there is a divisional requirement which is partly specified (e.g., Social Science, 18 credits of which 6 credits shall be in History) record both the specified & unspecified credit units in the appropriate blanks in the subtotal column. The sum of the subtotals should equal the total in each instance.

6. In cases of combined divisional requirements (e.g., Social Science and/or Humanities, 18 credits show range (e.g., 0 – 18) for each division, and add "C.R." (Combined Requirements) in same space.

Please use the "DEFINITIONS OF TERMS." above even though they may not agree with the practices at your institution. The definitions are designed to facilitate comparisons of curriculum patterns in the major fields of study. Degree requirements not listed under definitions should be listed under PART I, ITEM 1.

QUESTIONNAIRE: HUMANITIES

PART I - CREDIT UNITS FOR GRADUATION AS OF ACADEMIC YEAR 1962-63

** Check if degree is not given for your [illegible] →

	REQUIRED COURSES	LIST ONLY CREDIT UNITS BELOW: NON-TEACHER PREPARATORY MAJORS — B S DEGREE ☐ TOTAL	B S DEGREE SUB TOTAL	B A DEGREE ☐ TOTAL	B A DEGREE SUB TOTAL	TEACHER PREP. MAJORS — SPECIFY DEGREE GIVEN: ☐ TOTAL	TEACHER PREP. MAJORS SUB TOTAL
a	NATURAL SCIENCES						
	Biological Sciences						
	Physical Sciences						
	Specify natural Science Requirements not listed above						
	Unspecified natural Science Requirements						
b	MATHEMATICS & STATISTICS						
c	HUMANITIES						
	Art, general						
	English Language & Literature						
	Foreign Languages & Literature						
	Music						
	Philosophy						
	Religion						
	Speech & Dramatic Arts						
	Humanities, general						
	Specify Humanities Requirements not listed above						
	Unspecified Humanities Requirements						
d	SOCIAL SCIENCES						
	Economics						
	History						
	Political Science (government)						
	Sociology						
	Interdepartmental Courses						
	Specify Social Science Requirements not listed above						
	Unspecified Social Science Requirements						
e	GEOGRAPHY						
f	PSYCHOLOGY						
g	EDUCATION						
h	HOTC & PHYSICAL EDUCATION (If no credit is given, enter "0")						
i	Specify courses & credit units of any other required subjects not listed above (INCLUDE INTERDISCIPLINARY COURSES)						

1	TOTAL CREDIT UNITS FOR REQUIRED COURSES				
2.	CREDIT UNITS FOR ALL ELECTIVE COURSES				
a	CREDITS IN ELECTED MINOR FIELD				
b	ALL OTHER ELECTED COURSES				
3	TOTAL CREDIT UNITS REQUIRED FOR GRADUATION (This should equal the sum of item 1 and item 2. If not, explain)				

PART II — CHANGES IN CURRICULUM
(Required Courses)

QUESTIONNAIRE: HUMANITIES.

LIST ONLY COURSE NAMES IN [illegible]	LIST ONLY CREDIT UNITS BELOW: NON-TEACHER PREPARATORY MAJORS		TEACHER PREP. MAJORS
	B.S. DEGREE	B.A. DEGREE	[illegible]
1 CHANGES IN LAST 3 YEARS (see items a & b. Check here → if no change occurred for this major)	☐	☐	☐
a [illegible]			
b [illegible]			
2 CHANGES NOW BEING PLANNED (see items a & b. Check here → if no change is planned for this major)	☐	☐	☐
a [illegible]			
b [illegible]			

(OVER)

		PART III - *(Check one for each question)*	YES	NO
1	PROVISIONS FOR THE SUPERIOR STUDENT			
	a	During the past 10 years, has your department initiated or participated in specific programs, courses, or sections for superior students?		
2	ASSOCIATE DEGREE AND RELATED PROGRAMS			
	a	Does your institution award an associate degree, certificate, diploma, or other award based upon completion of 2 years of academic study at the freshman-sophomore level?		
	b	If yes, will the completion of the first two years of the 4-year curriculum reported in PART I meet the requirements for the associate degree, diploma, certificate, or other award at your institution?		
3	ENGLISH COURSES			
	a	Are the required English courses reported in PART I:	SPECIAL COURSES FOR STUDENTS IN THIS MAJOR CURRICULUM?	
			SPECIAL SECTIONS OF REGULAR ENGLISH COURSES?	
			ENGLISH COURSES WITH NO SPECIAL TREATMENT?	
	b	Are there any special features of the required English courses for this major curriculum (such as television, teaching machines, or unusual methods)?		
	c	If yes in item 3b, describe.		

QUESTIONNAIRE: HUMANITIES

IV

EXPLANATION OF ITEMS NOT APPLICABLE TO YOUR PROGRAM OR YOUR CURRICULUM DOES NOT FIT THE PATTERN ILLUSTRATED IN PART I. *(Include any specific requirements for graduation not covered in Part I, such as comprehensive examinations, senior thesis, etc.)*

* U.S. GOVERNMENT PRINTING OFFICE 1965 O - 778-264