A STUDY OF THE RELATIONSHIP OF SCHEDULED CONTACT HOURS TO CREDIT HOURS IN EIGHT PUBLICLY SUPPORTED COLLEGES AND UNIVERSITIES IN THE STATE OF MICHIGAN

Thesis for the Degree of Ed. D.

MICHIGAN STATE UNIVERSITY

Robert B. Trader

1961

This is to certify that the

thesis entitled

"A Study of the Relationship of Scheduled Contact Hours to Credit Hours in Eight Publicly Supported Colleges and Universities in the State of Michigan"

presented by

Robert B. Trader

has been accepted towards fulfillment of the requirements for

Ed.D. **degree in** Education

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Date November 9, 1961

O-169

ABSTRACT

A STUDY OF THE RELATIONSHIP OF SCHEDULED CONTACT HOURS TO CREDIT HOURS IN EIGHT PUBLICLY SUPPORTED COLLEGES AND UNIVERSITIES IN THE STATE OF MICHIGAN

by Robert B. Trader

THE PROBLEM. The purpose of this study was to determine the relationship of scheduled contact hours to credit hours, including lecture, laboratory, and recitation; and to explore the reasons for the existence of various contact-credit hour ratios as they existed in defined subject matter areas in eight publicly supported colleges and universities in the state of Michigan.

METHODOLOGY. The institutions in the study included Central Michigan University, Eastern Michigan University, Michigan College of Mining and Technology, Michigan State University, Northern Michigan College, the University of Michigan, Wayne State University, and Western Michigan University.

The official publications of the eight institutions, including bulletins, catalogs, and class schedules, served as the basis for the raw data of the study. All courses listed in the official publications of the participating institutions were included in the study except for graduate, arranged hour, variable credit and non-credit courses. Ratios were computed on the relationship of scheduled contact hours to credit hours for each course used in the study.

To facilitate ratio comparisons, twenty-nine subject matter areas were established and individual courses assigned to one of them. The twenty-nine subject matter areas were further classified into humanities, sciences, social sciences, and technical and professional groups. The eight institutions were classified as teacher training, technical, and multi-purpose. This structure made it possible to examine exhibited contact-credit hour relationships by subject matter classifications, by group classifications, by type of institution, and to determine if there were any patterns in the methods of offering various subject matter areas between different types of institutions.

FINDINGS. Included in the study were 10,799 courses. Sixty percent of these courses were offered on the basis of one scheduled contact hour for each credit hour. Thirty-eight percent, or 4,151, had scheduled contact hours in excess of the assigned credit hours; two percent, or 193 courses, allowed credit hours in excess of the scheduled contact hours.

Social sciences (all-institutional mean, 1.03) exhibited the lowest ratio of scheduled contact hours to credit hours, and generally exhibited balanced relationships in contact-credit hour arrangements.

Humanities (all-institutional mean, 1.26) exhibited a standard lecture-credit arrangement of one hour of scheduled contact for each hour of credit in lecture, recitation, or laboratory work, excluding music and art which exhibited wide

variations in ratios with no established pattern or published explanation for the variations.

Sciences (all-institutional mean, 1.37) exhibited similar ratios in the laboratory science of chemistry. Progressing from general chemistry to quantitative analysis, the required contact hours for each credit granted increased.

The technical and professional group (all-institutional mean, 1.45) exhibited wide variations in the ratio of scheduled contact hours to credit hours, but the variations were of a random nature and did not follow subject matter or institutional lines.

The findings indicated a significant number of courses being offered in the eight institutions that exhibited a relationship in excess of one scheduled contact hour for each credit hour. Research did not reveal published information explaining reasons for these requirements, or for the relationships found in contact-credit hour arrangements. Official published statements are needed explaining contact-credit hours in the various institutions. Students should know what to expect in contact-credit hour requirements for any course; the faculty should be utilized to the best interests of the educational objectives of the institution; and physical facilities should be employed at maximum efficiency.

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By

Robert B. Trader

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF EDUCATION

College of Education

1961

G 20818
5/24/62

ACKNOWLEDGMENT

The writer wishes to acknowledge the counsel and guidance given by Dr. Paul E. Dressel, major advisor, in the development of this study. He gave freely of his time, and his constructive suggestions proved invaluable.

The writer also wishes to acknowledge the contributions to the study made by his wife, Babette. Without her aid and encouragement the project would not have been completed.

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THE PROBLEM AND ITS SETTING

Purpose of the Study

It is the purpose of this study to determine the relationship of scheduled contact hours to credit hours, including lecture, laboratory, and recitation; and to explore the reasons for the existence of various contact-credit hour ratios as they exist in defined subject matter areas in eight state colleges and universities in the state of Michigan.

Development of the Study

As colleges and universities strive to meet the problems of increased enrollments, relatively inadequate financial support, maintenance of adequate staff and facilities, and to continue to offer acceptable academic programs, it becomes imperative that existing curriculums be evaluated from all possible perspectives. One such area of exploration could be a detailed study and analysis of current courses listed in college catalogs and bulletins, and the relationship of contact hours to credit hours. A course granting three credit hours and requiring three class hours of lecture or recitation with no laboratory work, expressed 3(3-0),

would exhibit a ratio of 1.00; while a course giving three hours of lecture and three hours of laboratory experience, expressed 3(3-3), would exhibit a 2.00 ratio. The course exhibiting the 2.00 ratio would require that the student have two scheduled contact hours of work for each hour of credit granted. The second example does not follow the traditional view that an hour of lecture or recitation is worth an hour of credit.

In December 1959, the Michigan State University Office of Institutional Research conducted a preliminary study involving all courses listed in the 1958-59 Michigan State University Catalog with the exception of courses offered on an arranged basis, graduate courses, or variable and non-credit courses.[1] Of the 2,173 courses that were analyzed, twenty per cent required contact hours equalling or exceeding twice the number of credit hours granted for the course. The study further indicated that there was a wide variation within and among departments in relating laboratory instruction to credit. These variations raised the following issues:

1. The possibility that courses requiring large numbers of contact hours in relation to credits places an undue burden on both the students and the staff.

2. The possibility that some laboratory instruction is less efficiently organized than others. Since degrees are determined by compilation of credits, courses of similar type and credit which vary greatly in demands on staff time raise the possibility that staff time is being used less efficiently

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[1]Office of Institutional Research. A Catalog Study of the Relationship of Credits and Contact Hours with Particular Attention to Laboratory-Type Instruction. A Report Prepared by the Office of Institutional Research, Michigan State University. East Lansing, 1959.

in one case than in another.

3. Laboratory instruction is relatively more expensive both in space requirements and in staff time. Heavy course requirements in laboratory instruction tend to be accompanied by high instructional costs and/or the imposition of unduly heavy load on the staff.[2]

It should also be noted that courses exhibiting high ratios of scheduled contact hours to credit hours may destroy the opportunity for initiative. The student becomes more dependent on the professor through increased required contacts.

The report indicated that if the variations in the course contact-credit hour relationships resulted from random recommendations or a lack of policy or principles, then some of the departments might find it desirable to consider some revisions in their courses. Any revisions should be made on rational considerations intrinsic to the nature of a course or field rather than based on idiosyncrasies of individuals in a single department.

Historically, there appears to be very little published information as to how the existing contact-credit hour relationship in collegiate courses was established. Brubacher, in his book, Higher Education in Transition, spoke of the influence of the German scholars in the development of the American higher education curriculums. Specifically he states:

> The German educated scholars of the latter half of the nineteenth century brought back to America a number of key research techniques and instructional procedures

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[2] Ibid., p. 2.

which radically transformed their native academic landscape. They developed laboratories, established research libraries, organized seminar groups, assigned research papers, subdivided the part of the curriculum which dealt with their subjects into many specialized courses, and built up departments composed of like minded individuals.

The widespread popularity of the lecture method and the increasing use of laboratory techniques as a part of scientific instruction also owed much to German influence. This new rigor in colleges and university work, this respect for higher standards of accuracy and precision, Daniel C. Gilman traced back to the introduction of laboratory methods in chemistry by the great teacher Liebig, and subsequently in physics and biology by other men of genius.[3]

Although the above reference is restricted to the introduction of laboratory work in the American educational programs, the laboratory work probably served as a guide pattern for determining the number of additional assigned hours required of a student over and above the regularly scheduled class hours.

In the state of Michigan, the earliest published information on course material as it related to the granting of academic credit was found in Hinsdale's History of the University of Michigan. According to this author, about 1863, the University of Michigan established a credit system. The system was explained as follows:

Originally it embraced the following features: five exercises a week during a semester, whether in recitation, laboratory work or lecture should constitute a full course of work. The completion of twenty-four such courses should be required to obtain the recommendation of the Faculty for the degree of

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[3]Brubacher, John S. Higher Education in Transition (New York: Harper Brothers Press, 1958), p. 184.

> Bachelor of Arts, or of Civil Engineering, or of Mining Engineering; but the completion of twenty-six full courses should be required to obtain the recommendation for the degree of Bachelor of Philosophy or Bachelor of Letters.[4]

The full account of the University of Michigan's credit system suggested that there was a great deal of flexibility in the actual method of setting up course hours and criteria. It is interesting to note that today, almost one hundred years after the establishment of the above definition for the term "credit", some current college and university catalogs and bulletins are no more specific about the actual contact hours required of a student for credit in a course than were the original credit standards.

With these thoughts in mind, it would appear that there are at least three major considerations which would support the need for a more detailed study of other colleges and universities and their policies regarding the relationship of credit hours to scheduled contact hours. Such considerations would be: (1) student interpretation of course offerings as shown in official college and university bulletins, (2) utilization of faculty, and (3) utilization of plant facilities.

Student interpretation of course offerings as shown in official college and university bulletins.--The Michigan State Report indicated that nearly twenty per cent of the course offerings at Michigan State University required contact

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[4]Hinsdale, Burke A. History of the University of Michigan (Ann Arbor: University Press, 1906), p. 112.

hours equalling or exceeding twice the number of credit hours granted for the course. According to the 1958-59 official Michigan State University Catalog, "one credit is given for three hours of effort per week for twelve weeks in lecture, recitation, laboratory, field, shop, or preparation."[5] Therefore, any course that required more than three contact hours per credit, or in excess of a 3.00 contact-credit hour ratio, would be in violation of stated university policy. By the same token, it could be interpreted that any course requiring less than three hours of effort for one credit hour would be requiring less than the stated university requirements.

With the range of contact-credit hour ratios of .75 to 5.75, as exhibited in the Michigan State University Study, a student, using the college catalog as a source of information, would not know specifically the number of contact hours for any scheduled credit course. If higher educational institutions have as their goal the development of individual students to maximum capacity, then the "ground rules" for the developmental program should be clearly defined.

Utilization of faculty.--Any three credit course exhibiting a credit-contact hour ratio of 1.00 would require only three scheduled hours of staffing and place the burden for any additional hours of any type work on the student. As the ratio of credit hours to contact hours increases, the responsibilities for staffing the additional contact hours is

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[5]Michigan State University Catalog, 1958-1959, including 1959-1960 Supplement. Vol. 54, No. 8, (East Lansing: December, 1959), p. 28.

increased.

John Dale Russell,[6] in his report on instructional programs in Michigan institutions of higher education, presented an analysis of instructional salary expenditures per student-credit hour in various subject matter areas. The subject matter areas used in the Russell Report were not established on the same basis as the subject matter areas in this study, but these points were made with reference to staff expenditures:

> The subjects that tend to be low in instructional salary expenditures per student-credit hour produced are the social sciences and the humanities and, at the lower level, the introductory science courses. Among the low-cost subjects at the undergraduate level are anthropology, biological science, business administration, economics, geography, history, mathematics, philosophy, political science, religion, and sociology. Among the high cost subjects are agriculture, forestry, home economics, industrial technology, journalism, library science, music, pharmacy, physical education, speech and drama, almost all the foreign languages, and most of the branches of engineering.
>
> With few exceptions, the high-cost subjects seem to be mainly technical or occupational. In general, the high-cost subjects listed above have about twice the instructional salary expenditure per student-credit-hour that the low-cost subjects have. The differences in costs are due in the main to the maintenance of small classes and the student-credit-hour production per faculty member. While there should be no attempt at an absolute equalization of instructional salary expenditure per student-credit-hour among the various subject matter areas in a given institution, the differences shown in the tabulations of the study should cause some questions to be raised, by academic administrative officers and faculties in most of the institutions, as to whether or not the differences in the contributions made to institutional objectives are commensurate with

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[6]Russell, John Dale. Instructional Programs in Michigan Institutions of Higher Education. A Survey Prepared for the Michigan Legislative Study Committee on Higher Education. Lansing, 1958.

> the differences in the instructional salary expenditure per student-credit-hour among the various subject matter areas.[7]

Although the present study is not primarily concerned with an analysis of faculty teaching loads, it would seem that high instructional costs in various subject matter areas as described in the Russell Report would be accentuated not only in high cost subject matter areas, but by a course that requires more than one contact hour for one credit hour of work.

Baskin,[8] in discussing some of the new experimental college programs based on independent study wherein the student does independent work or reading on his own or in groups, but where such work takes place in the absence of the teacher and without regularly scheduled class meetings, suggests that educators must re-examine the nature of the teaching and learning processes. Although Baskin is reviewing the experimental programs as they might influence methods of learning and improve programs of study, he makes the following comments relative to the class hour approach in education:

> Students, it seems, are able to learn as well with much less class time than has customarily been required of them. The evidence indicates that there should be a closer examination of the "class hour formulae" and increased attention to the development of the student's initiative and responsibility for what he studies.[9]

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[7] Ibid., p. 175.

[8] Baskin, Samuel. Quest for Quality (U. S. Department of Health, Education, and Welfare, No. 7, "New Dimensions in Higher Education Series"), Washington, D. C.: 1960.

[9] Ibid., inside front cover.

A close analysis of many experimantal programs will reveal that college and university administrators are seeking ways and means to accommodate the tremendous surge of college students who will be seeking admission during the next decade. Competent faculty members are difficult to locate, employ and then retain. Under present conditions, courses should be examined closely for means of improving the method of instruction and ultimately adjusting the cost factor. This might be accomplished with ease if quality in student performance would be waived, but such a sacrifice should not be considered. Academic standards and goals must be maintained.

Utilization of plant and facilities.--In those courses which yield contact to credit hour ratios greater than one, it would appear that the additional scheduled hours do not have the same credit value as one hour of lecture. Nevertheless, each contact hour does involve an hour of use of some physical facilities.

During the 1957-1958 academic year, the Office of Education, Washington, D. C., released the expenditure categories for institutions of higher education. According to Henry G. Badger[10] who prepared the report, a total of four and seven-tenths billion dollars was allocated to institutions of higher education for day-to-day activities. This figure represented an increase of twenty-nine per cent over the corresponding period of 1955-1956. Of the expenditures made,

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[10]Badger, Henry G. "Higher Education Finances: 1955-56 and 1957-58," Higher Education, March, 1960.

according to purpose, physical plant operation and maintenance showed the least amount of increase from 1955-1956 to 1957-1958. This would indicate that if anticipated enrollments for the next two decades reach an estimated six million students, and if physical plants and facilities continue to maintain their slow growth pattern, there will of necessity be some drastic action taken to offer accommodations for incoming students.

Early in 1960, Dr. Ernest V. Hollis,[11] Director of the College and University Administration Branch, Division of Higher Education, Office of Education, discussed the magnitude of the physical facilities problems in higher education. In his writing he estimates that by the fall of 1965 college enrollments will reach 5.2 million students, and by the fall of 1970, total enrollments will exceed six million students. To accommodate such enrollments he suggests an austerity program of sixteen billion dollars for the 1960 decade. The sixteen billion dollar program, except for built-in items, does not include equipment need, the cost of site acquisitions, or site development. It further assumes the continued use of temporary and obsolete structures that have not been condemned as health or fire hazards. Even with the sixteen billion dollar college plan, several assumptions are made by Dr. Hollis, as follows: (1) we will not have radical changes in programs and methods of instruction; (2) we have

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[11]Hollis, Ernest V. "Facilities for Higher Education," Higher Education, January, 1960. pp. 3-19.

a net unused amount of space which will accommodate 200,000 more students than are now enrolled; (3) we can increase use of instructional space by at least twenty-five per cent through improving scheduling, reducing the number of small classes, and making better per-student-station use of facilities; and (4) colleges will not have to provide residential facilities for more than thirty-five or forty per cent of full time enrollment, and not more than ten per cent of the residential students will be married and living with their families.

Dr. Hollis summarizes the situation with this statement:

> If the more than 6 million youths expected to enroll in college in 1970 are to have as good facilities as the 3.4 million youths now in college have (many of theirs are substandard), we must invest at least 16 billion in physical plant development before 1970. In round numbers, 10.5 million of the total should be devoted to the expansion of facilities, 6.5 billion to instructional purposes, and 4 billion to dormitories and related residential use. The remaining 5.5 billion should be used over the decade to replace and rehabilitate existing instructional residential facilities to keep them safe for human use.[12]

Again, it would seem that very serious consideration should be given to using the currently existing plants and facilities at maximum efficiency, and to doing some concerted planning about utilization of new facilities in the future. One answer could be the restudy of course credit for a specified number of hours spent in any classroom activity.

The use of the trimester plan at the University of Pittsburgh, at Michigan State University at Oakland, and at

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[12] Ibid., p. 19.

Kalamazoo College is an attempt to utilize more fully the staff and facilities of these institutions while increasing the number of students that can be accommodated during one calender year. Of course, this is one approach to the serious problem of more students than available accommodations, but it is not the complete answer to the situation. Actual course content and method of presentation of course material has not been revised drastically.

In the "Trimester Plan at Pittsburgh",[13] it is pointed out that classes meet the same number of times per week as under a semester plan, and that no acceleration of study within a trimester will be needed. Therefore, it would appear that any analysis of the relationship of the contact hours to the credit hours in the three schools mentioned as being on the trimester plan would show little, if any, change from the regular semester plan of study.

As previously indicated, there are many different experimental plans being initiated throughout the nation in an attempt to provide quality education with existing staff and facilities. There seems to be a definite lack of experimentation into specific research concerning relationships of scheduled contact hours to credit hours in subject matter areas. The tabulations of the preliminary report in this field were confined to Michigan State University. With the wide variations in practices and courses in this institution,

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[13]"Trimester Plan at Pittsburgh," Higher Education, February, 1959, p. 110.

it would be appropriate to consider whether the same patterns of contact-credit hours exist in other state colleges and universities and in similar courses; and to explore any reasons for the various relationship as they might be recorded in official catalogs or class schedules.

Scope of the Study

The study is organized to include eight publicly supported colleges and universities in the state of Michigan. Included are: (1) Central Michigan University, Mount Pleasant; (2) Eastern Michigan University, Ypsilanti; (3) Michigan College of Mining and Technology, Houghton; (4) Michigan State University, East Lansing; (5) Northern Michigan College, Marquette; (6) University of Michigan, Ann Arbor; (7) Wayne State University, Detroit; (8) Western Michigan University, Kalamazoo.

Ferris Institute in Big Rapids was not included in the study, because this school had not been under a full-time state institutional program long enough to have established fixed patterns and course offerings.

It is not the intent of this study to inquire into administrative or departmental structures which vary considerably among the colleges. Regardless of departments, all course offerings were placed in comparable classifications by subject matter areas.

It would be impractical to attempt an analysis of any course offering that did not have complete information as to allocation of lecture, recitation, or laboratory work

credit in relationship to the credit hours; therefore all arranged, variable credit, and non-credit courses were omitted from this study. By way of example, a music course might be listed as granting four credit hours, all on an arranged basis; or an industrial arts course might show a five credit course with two hours of lecture plus arranged laboratory work. Such courses were not included in the tabulations.

Courses which were offered at the freshman or lower level but did not offer college credit were not included in the study. Any course which was given for undergraduate degree credit was included even though graduate students might take the course for credit. Strictly graduate level courses were excluded.

The official college and university bulletins and class schedules for the academic year 1959-1960 provided the basis for course offerings, descriptions, credits, time schedules, and lecture-laboratory arrangements. Eastern Michigan University, the University of Michigan, Wayne State University, and Western Michigan University do not publish college bulletins that contain contact-credit hour information for course offerings. Official class schedules provided the only source of information for these four schools.

Utilizing the findings as represented in the study, an attempt will be made to: (1) discover if there are any patterns of contact-credit hours exhibited within the subject matter areas common to all schools represented in the study,

and (2) explore the basis for any variations as exhibited in the study.

Limitations of the Study

The original thoughts involved with the preliminary Michigan State University study previously mentioned included a concern about utilization of the college and university staff and facilities, as well as the problem of lack of uniformity in course offerings involving excessive contact hours for equivalent credit hours. It is the intent of the present study to follow these basic ideas on a wider scale.

The current study does not include private, municipal, or parochial higher educational institutions within the state of Michigan.

The study is not designed to question course descriptions, but it will be necessary to comment on a few selected course descriptions to emphasize the ambiguity that does exist in such published material. Other than the course description given in the official bulletin, catalog, or class schedule, which was consulted in grouping courses, the specific course content was not considered in this study.

If a course was offered in different schools or departments among the various colleges and universities involved in the study, the course was placed in an assigned category by subject matter. No attempt was made to justify the organizational and administrative control of such courses.

Any course offered by an institution that qualified for inclusion by meeting the requirements of the study as

previously set forth was included in the tabulations.

CHAPTER II

METHOD OF STUDY

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Source of Data

The official college and university catalogs or bulletins of four schools, and the official class schedules of four institutions, for the academic year 1959-1960, served as sources for the raw data of this study. The catalogs and bulletins indicated the credit hours and the number of hours required in lecture, recitation, and laboratory. Official class schedules present credit hours, lecture and recitation, and laboratory sessions. Course descriptions were not pertinent for this study.

The official publications for the participating schools included: (1) Central Michigan University Bulletin, 1959-1960 Sessions; (2) Eastern Michigan University Class Schedules, Fall, 1959, and Spring, 1960, Revised; (3) Michigan College of Mining and Technology Bulletin, 1959-1960; (4) Michigan State University Catalog, 1958-1959 including 1959-1960 Supplement; (5) Northern Michigan College Bulletin, 1958-1960; (6) University of Michigan Time Schedules, First and Second Semester, 1959-1960; (7) Wayne State University Bulletin, Schedule of Classes, 1959-1960; and (8) Western Michigan University Schedule of Classes, Fall Semester, 1959, and Schedule of Classes, Spring Semester, 1960.

Since the term "credit hour" provided the basis for the collection and interpretation of the raw data as taken from the official school publications, it was felt that an official statement by each institution on the definition of credit hour should be recorded.

According to the Central Michigan University Bulletin:

> The Quantitative Unit of credit is the semester hour which may be roughly defined as three hours of actual work by the student each week throughout a semester, i.e., one hour of lecture or recitation with two hours of preparation or three hours of drawing, laboratory work or study and writing. In other words, a person of average ability is expected to expend at least forty-eight hours of intelligent effort for each hour of credit awarded him.
>
> Laboratory work under supervision of an instructor is measured by counting two hours as equivalent to one hour of class attendance. Let us take, for example, a course for which four semester hours of credit are given. The class meets two days per week in one hour sessions and two days per week in two hour laboratory periods. The student does six hours of work outside of class and laboratory. Thus he devoted to this course twelve hours per week which is the normal time requirement for a four semester hour course.[14]

A further explanation of the course numbers and credit symbols disclosed that the number of semester hours credit in each course was indicated by the number preceding the parentheses following the title of the course. The first number within the parentheses indicated the number of hours of lecture per week, and the second number indicated the number of hours of laboratory per week. Thus 4(3-2) meant four hours of credit, three hours lecture, and two hours laboratory.

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[14]Central Michigan University Bulletin, 1959-1960 Sessions. Vol. 65, No. 4, (Mount Pleasant: July 1959), p. 79.

The Eastern Michigan University Class Schedule[15] provided the raw data for that institution, but the undergraduate catalog furnished the following information on credit hours:

> Credits: The unit of work or credit is the semester hour. A semester hour is the credit granted in a course meeting once a week for eighteen weeks. Credits earned here on the term hour basis prior to September 1939 are converted into semester hours by multiplying by 5/8.[16]

Under the "Physical Education Activity and Military Science Requirements," the following statement from the college catalog explained the term "activity":

> All students shall present for graduation four semester hours (twelve activity hours) in Physical Education activity courses. Since credit in activity courses is computed in activity hours rather than semester hours, it should be understood that three activity hours are equal to one semester hour.[17]

The Michigan College of Mining and Technology Bulletin offered the following information relative to credits:

> Credit (or credit hour of term credit):
> A credit is the unit used for measuring the quantity of academic work done by a student. On the average, it represents three hours of effective effort per week for one term. The three hours may be distributed in several ways: (a) one hour of lecture or recitation plus two hours of outside study, (b) two hours of laboratory work plus one hour of outside study, or (c) three hours of laboratory work. If you register for a course that carries four credits you should plan to spend, on the average, twelve hours per week on that course.
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> Course Information:
> Each subject is identified in terms of its symbol;

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[15] Eastern Michigan University Class Schedules, Fall 1959, and Spring 1960, Revised. Ypsilanti: 1959.

[16] Eastern Michigan University Undergraduate Catalog, 1959-1960. Vol. XILX, No. 4, (Ypsilanti: April 1959), p. 16.

[17] Ibid., p. 29.

its name, the number of hours a week devoted to lecture, class and laboratory; the quarter or quarters in which the subject is offered, and the number of credits that it carries. For example: CH201. Quantitative Analysis. (1-2-8) f or w... 5 means that the course in Quantitative Analysis is symbolized as CH201; that classes meet for one one-hour lecture, two one-hour recitations, and two four-hour laboratory periods per week; that the subject is regularly given in the fall or winter quarters; and that it carries five credits. A credit normally represents three hours of the student's time; thus in the example cited, no outside preparation is expected for the lecture and for the two four-hour laboratory periods; however two hours of preparation are normally required for each of the two class periods.[18]

The catalog of Michigan State University for 1958-1959, including the 1959-1960 supplement, discussed the term credit as follows:

Credits. Definition. One credit requires three hours of effort per week for twelve weeks in lecture, recitation, laboratory, field, shop, or preparation. All courses are given on a term basis and credits earned are term or quarter credits. To convert these credits to semester credits, they should be multiplied by 2/3.[19]

The official bulletin from Northern Michigan College defined credits and departments of instruction as follows:

Credits. The unit of work and of credit is the semester hour. A semester hour is the credit granted in a course which meets once a week for eighteen weeks.

Department of Instruction. In the descriptive matter, the words First Semester and Second Semester denote the semester in which the subject is offered. The first figure immediately following the semester in the title line indicated the number of the semester hours of credit given for the subject. The first figure within the parentheses indicated the number of class recitations

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[18] Bulletin of the Michigan College of Mining and Technology, 1959-1960. Vol. 31, No. 4, (Houghton: November, 1958), p. 4.

[19] Michigan State University Catalog, 1958-1959, op. cit., p. 28.

> or lectures per week and the second figure the number of laboratory hours per week. For example: 3(1-4) indicated three semester hours of credit earned as one lecture hour and four laboratory hours per week.[20]

Under the announcements for the University of Michigan College of Literature, Science and the Arts, 1960-1961, the following information was given to describe credit hours:

> One credit hour represents ordinarily about three hours of actual work each week throughout one semester; that is one recitation or lecture with two hours of preparation or three hours of drawing or laboratory work.[21]

The term "unit of credit" as defined in the bulletin for the College of Education at Wayne State University was as follows:

> The unit of credit is the semester hour, defined as one hour of class attendance requiring about two clock hours of preparation, or three clock hours of laboratory work, per week for eighteen weeks.[22]

The official catalog for 1959-1960 for Western Michigan University defined a unit of credit as follows:

> Unit of credit. The unit of credit is the semester hour; the number of semester hours credit given for a course generally indicates the number of class periods per week.[23]

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[20] Northern Michigan College Bulletin, 1958-1960. Vol. LVIII, No. 6. (Marquette: July 1958), pp. 33, 99.

[21] University of Michigan College of Literature, Science, and the Arts Announcements 1960-1961. (Ann Arbor: 1960), p. 35.

[22] Wayne State University Bulletin, 1959-1960, College of Education. (Detroit: 1959), p. 30.

[23] Western Michigan University Catalog and Announcements 1959-1960. Vol. 54, (Kalamazoo: April 1959), p. 60.

From the stated official publications of the eight schools involved in this study, it was quite apparent that the policies that govern the granting of credit and the scheduled contact hours required to have this credit granted are not clearly defined. Such phrases as "three hours of actual work", "effective effort", "effort", "about three hours of actual work", "one hour of class attendance", and "the number of semester hours credit given for a course generally indicates the number of class periods per week" did not suggest a sound basis for determining the relationship of scheduled contact hours to credit hours.

It should be noted that undoubtedly there were courses listed in official college catalogs that were not offered on a regular class schedule, and in some instances were listed but had not been offered for several years. This meant that in those schools where the official college catalog or bulletin was used (Central Michigan University, Michigan College of Mining and Technology, Michigan State University, and Northern Michigan College), there were more courses involved in the data than in the schools where time schedules of classes were used (Eastern Michigan University, University of Michigan, Wayne State University, and Western Michigan University).

The John Dale Russell report on institutions of higher education in Michigan included an analysis of the number of semester hours of different courses listed in institutional catalogs, and excess of this number over the

number actually taught during the academic year 1955-1956.[24] Ferris Institute and Michigan College of Mining and Technology, Sault Ste. Marie Branch, were included in the Russell report, but not in the present study. The Russell report revealed that the state-controlled institutions had 18.5 per cent more semester hours of different courses listed in the catalogs than were actually being taught. This figure was lower than all other types of institutions in the state including private and community colleges. It was felt that the courses involved in this group would not influence the basic pattern for the current study.

Classification of Data

Wide variations in organizational and departmental structures made it impossible to classify the data according to schools, colleges, or departments within an institution. The logical approach seemed that of using subject matter areas, and disregarding completely lines of institutional structure or authority. The subject matter was classified into twenty-nine subject matter areas as follows:

1. Agriculture
2. Art
3. Biology
4. Business Administration
5. Chemistry
6. Economics
7. Education
8. Engineering
9. English
10. Geography
11. Geology
12. History

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[24]Russell, op. cit., p. 47.

13. Home Economics
14. Industrial Arts
15. Languages
16. Library Science
17. Mathematics
18. Military Science
19. Music
20. Nursing
21. Occupational Therapy
22. Pharmacy
23. Philosophy and Religion
24. Physical Education
25. Physics and Astronomy
26. Political Science
27. Psychology
28. Sociology
29. Speech and Drama

To facilitate the comparison of the relationships of ratios exhibited in the contact-credit hour arrangements, the twenty-nine subject matter areas were further stratified into four groups: (1) humanities, (2) social sciences, (3) sciences, and (4) technical and professional. The eight schools in the study were grouped as teacher training, technical and multi-purpose. With this system of classification, it was possible to compare the ratio of scheduled contact hours to credit hours by major groups of subject matter and by type of institution. Each of these classifications will be defined in Chapter IV.

Not all of the schools in the study offered all of the subjects listed, but it was possible to assign most of the courses in the institutions to one of the subject matter classifications, and from this point into one of the four major groupings. With 10,799 courses being recorded, and with limited information available, the classification often was a highly subjective one and some errors may have been made.

Method of Data Collection

The raw data for this study were collected by recording course offerings by subject matter areas of all institutions involved in the study as ratio figures, with the ratio representing the relationship of scheduled contact hours to credit hours. Library research on published material pertinent to the study was conducted, and some personal interviews with deans and/or department heads were held.

Course Offerings

Using the official college catalogs or bulletins, whichever publication was applicable, every qualified course was checked for the number of credit hours and the manner in which these hours were to be distributed to receive credit for the course. It was possible to express the relationship of the scheduled contact hours to credit hours in the form of ratios. By way of example, the first school to be tabulated was Central Michigan University. Central offered eighteen of the twenty-nine subject matter areas represented for analysis. Using the subject matter area of agriculture, with sixteen courses offered, it was found that eleven or 68.8 per cent displayed a scheduled contact hour to credit hour ratio of 1.00 to 1.00 (one scheduled contact hour to one credit hour), and were expressed as 3(3-0). The remaining five courses exhibited ratios of 1.25, expressed as 4(3-2); 1.33, expressed as 3(2-2); 1.50, expressed as 2(2-1);

and 1.67, expressed as 3(1-4). The composite ratio for agriculture was then placed in the technical and professional group classification.

Translated into credit and contact hours, 3(3-0) would mean three credit hours for three hours of lecture and no laboratory period; 4(3-2) would be four credit hours with three hours of lecture and two hours of laboratory; and the remainder of the ratios would be computed in the same manner.

Exploration of Reasons for Ratio Variations

Subject Matter Ratio Patterns

The twenty-nine subject matter areas were explored by individual institutions, and then the subject matter areas, reclassified in the four groups of humanities, social sciences, sciences, and technical and professional by types of institutions, were analyzed. An attempt was made to see if there were any contact-credit hour relationship patterns exhibited in subject matter areas and by different types of institutions. The complete findings will be discussed in the presentation of data.

Accreditation Requirements

Since the institutions involved in this study were members of various accrediting associations, either by institution, college, or special field of interest, the published information for accreditation in various subject matter areas was examined to determine if certain contact-

credit hour relationships were prerequisites for accreditation within a specified area. The results of this exploration will also be discussed in the presentation of data.

Interviews

In those subject matter areas which exhibited ratios significantly in excess of one scheduled contact hour for each credit hour, the deans and/or heads of departments of one institution were interviewed. The topics discussed during the interviews included an explanation of the study, the findings for the subject matter as it pertained to each area, the reasons for variations as explained from the viewpoint of the departmental chairman, the influence of institutional practices on variations, and the influence that accrediting associations might have on variations. The results of the interviews will be reported in Chapter IV.

CHAPTER III

PRESENTATION OF DATA ON COURSE OFFERINGS

CHAPTER III

PRESENTATION OF DATA ON COURSE OFFERINGS

Data on Individual Institutions

To insure that all appropriate courses were included in the study, the contact-credit ratios were recorded by individual official college or university catalog or class schedule. The original tabulations included contact-credit hour ratios by: (1) subject matter area, (2) number of courses in each ratio group, and (3) the percentage of each ratio group within each subject matter area. With this information it was possible to compute: (1) the contact-credit hour ratio for each course in every subject matter area, (2) the arithmetic mean contact-credit hour ratio for each subject matter area, and (3) the numerical ranking by contact-credit hour ratios of each subject matter area in each institution.

Since the intent of this study was to investigate any possible patterns of contact-credit hour ratios between like subject matter areas within different institutions, it was not necessary to express the contact-credit hour ratio for each subject matter in each school as a variation from the institutional mean ratio. Physics might exhibit a much higher contact-credit hour ratio than political science

within the tabulations of one school. This in itself was not significant unless there appeared to be a similar pattern in all institutions for physics, political science, or any other subject matter area. Computations and comparisons on these data will be presented in the institutional discussions.

The following information represents the findings and analysis, as explained in the two previous paragraphs, for each of the institutions represented in the study.

Central Michigan University

Central Michigan University had eighteen departmental areas, and by re-assigning the departmental subjects into the classifications being used in the study, twenty-five subject matter areas were represented. The number and percentage of courses by departments exhibiting various ratios of scheduled contact hours to credit hours, and the mean for each of the departments were determined. (Appendix A) To enable comparisons of ratios between the eight institutions, all of the eligible courses listed in the table were placed in the study subject matter classifications.

In those departments where two subject matter areas were combined by the institutional administrative structure (such courses as physics and chemistry, psychology and education, and geography and geology), each subject matter ratio was calculated independently. In the case of psychology and education, psychology had a total of twenty-five courses with a mean ratio of 1.07, while education had thirty-six courses exhibiting a 1.07 ratio. Each ratio was recorded

in the proper catagory. The same procedure was followed throughout this portion of the study.

Table 1 indicates the contact-credit hour mean ratios by subject matter areas, and it also provides a ranking of subject matter ranges from the highest ratio (military science, 2.34) to those courses having 1.00 ratios (economics, history, languages, philosophy and religion, political science, and sociology). It must be remembered that the analysis in this chapter was restricted to individual institutional subject matter ratios and patterns.

TABLE 1

CONTACT-CREDIT HOUR MEAN RATIOS BY SUBJECT MATTER AREAS, CENTRAL MICHIGAN UNIVERSITY

Subject Matter	Ratio
Military Science	2.34
Chemistry	1.69
Physical Education	1.63
Biology	1.61
Art	1.56
Industrial Arts	1.54
Physics	1.42
Music	1.38
Home Economics	1.32
Geology	1.17
Library Science	1.17
Agriculture	1.13
Business Administration	1.12
Education	1.07
Mathematics	1.07
Psychology	1.07
Geography	1.05
English	1.03
Speech and Drama	1.02
Economics	1.00
History	1.00
Languages	1.00
Philosophy and Religion	1.00
Political Science	1.00
Sociology	1.00

Table 2 summarizes the number of courses in various ratio classifications, and it also expresses each ratio group as a percentage of the total course offerings. Sixty-eight per cent of the courses had a relationship of one contact hour for each credit hour, while thirty-two per cent of the courses exhibited ratios in excess of 1.00. Thirty per cent of the courses offered over the 1.00 ratio were in the 1.01 to 2.00 grouping, and roughly one third of all the courses offered were in excess of one contact hour for each credit offered.

TABLE 2

RATIO OF SCHEDULED CONTACT HOURS TO CREDIT HOURS BY RATIO GROUPS, NUMBER OF COURSES, AND PERCENTAGE OF TOTAL COURSE OFFERINGS, CENTRAL MICHIGAN UNIVERSITY

Ratio	Number of Courses	Per cent of Courses
Below 1.00	...	...
1.00	514	68.2
1.01 - 2.00	223	29.5
2.01 - 3.00	17	2.3
3.01 - 4.00	...	...
4.01 - 7.00	...	...
7.01 -31.50	...	...
Total	754	100.0

With this information, it is quite evident that there are wide variations within subject matter areas at Central

Michigan University regarding the relationship of contact hours to credit hours.

Eastern Michigan University

Eighteen departmental areas were present at Eastern Michigan University, but a re-classification of the courses into the study subject matter groups provided twenty-four classifications. Appendix B indicates the number and percentage of courses by departments as listed in the official class schedules, and the mean ratio for each department representing the relationship of the contact hours to credit hours.

Table 3 indicates the contact-credit hour mean ratios by subject matter areas, and it also provides a ranking of subject matter ranges from the highest ratio (physical education, 2.62) to those with 1.00 ratios.

Table 4 is the summary table for the number of courses in various ratio classifications, and it also expresses each ratio group as a percentage of the total course offerings. Sixty-seven per cent of the courses had a relationship of one contact hour for each credit hour, twenty-one per cent had ratios between 1.01 and 2.00, while eleven per cent ran over the 2.00 ratio. Thus, Eastern Michigan University had thirty-two per cent of the course offerings that are in excess of one contact hour for each credit granted.

TABLE 3

CONTACT-CREDIT HOUR MEAN RATIOS BY SUBJECT MATTER AREAS, EASTERN MICHIGAN UNIVERSITY

Subject Matter	Ratio
Music	2.09
Physical Education	2.07
Art	1.86
Languages	1.73
Chemistry	1.67
Military Science	1.63
Biology	1.54
Home Economics	1.31
Physics and Astronomy	1.28
Business Administration	1.25
Geography and Geology	1.10
Library Science	1.07
Occupational Therapy	1.06
Education	1.03
Economics	1.00
History	1.00
Industrial Arts	1.00
Mathematics	1.00
Philosophy and Religion	1.00
Political Science	1.00
Sociology	1.00
Speech and Drama	1.00
English	1.00

TABLE 4

RATIO OF SCHEDULED CONTACT HOURS TO CREDIT HOURS BY RATIO GROUPS, NUMBER OF COURSES AND PERCENTAGE OF TOTAL COURSE OFFERINGS, EASTERN MICHIGAN UNIVERSITY

Ratio	Number of Courses	Per cent of Courses
Below 1.00	...	...
1.00	389	67.3
1.01 - 2.00	121	21.2
2.01 - 3.00	52	9.0
3.01 - 4.00	2	.3
4.01 - 7.00	13	2.2
7.01 -31.50	...	...
Total	577	100.0

Michigan College of Mining and Technology

The sixteen departments listed by Michigan College of Mining and Technology, converted to the subject matter classifications of this study, became twelve eligible subject matter areas. Eight of the departments involved variations and combinations of engineering with chemistry, geology and business administration. The course descriptions were well suited for the technical nature of the institution. Appendix C shows the number and percentage of courses by departments exhibiting various ratios of scheduled contact hours to credit hours, and the mean for each of the departments.

Table 5 indicates the contact-credit hour ratios by subject matter areas, and it also provides a ranking of subject matter from the highest (military science, 2.34) to the five subject matter areas exhibiting 1.00 ratios (business administration, history, languages, library science, and psychology).

Table 6 summarizes the number of courses in various ratio classifications, and it also expresses each ratio group as a percentage of the total course offerings. Fifty-one per cent of the courses had a ratio of one contact hour for each credit hour, but forty-nine per cent had ratios in excess of 1.00. The department of geology and geological engineering had two field courses in geology allowing eight hours of credit in one case and requiring fifty hours of field work for a ratio of 6.25, and the second course gave three hours of credit for fifty hours of field work for a ratio of 16.67.

TABLE 5

CONTACT-CREDIT HOUR MEAN RATIOS BY SUBJECT MATTER AREAS, MICHIGAN COLLEGE OF MINING AND TECHNOLOGY

Subject Matter	Ratio
Military Science	2.34
Physical Education	2.00
Chemistry	1.67
Engineering	1.66
Physics and Astronomy	1.25
English	1.21
Mathematics	1.01
Business Administration	1.00
History	1.00
Languages	1.00
Library Science	1.00
Psychology	1.00

TABLE 6

RATIO OF SCHEDULED CONTACT HOURS TO CREDIT HOURS BY RATIO GROUPS, NUMBER OF COURSES, AND PERCENTAGE OF TOTAL COURSE OFFERINGS, MICHIGAN COLLEGE OF MINING AND TECHNOLOGY

Ratio	Number of Courses	Per cent of Courses
Below 1.00	...	...
1.00	321	51.3
1.01 - 2.00	226	36.2
2.01 - 3.00	75	12.0
3.01 - 4.00	...	...
4.01 - 7.00	1	.2
7.01 -31.50	2	.3
Total	625	100.0

Michigan State University

Michigan State University had nine colleges plus military science. Assigning the eligible courses in these colleges into the subject matter classifications gave the institution representation in twenty-six subject matter areas. The only three subject matters not represented were library science, occupational therapy, and pharmacy. Appendix D provides the number and percentage of courses by college and departments exhibiting various ratios of scheduled contact hours to credit hours, and the mean ratio for each college and department.

Table 7 indicates the contact-credit hour ratios by subject matter classification, and it also provides a ranking of subject matter from the highest ratio (military science, 2.34) to the lowest ratio (philosophy and religion, .94).

Table 8 is a summary of the number of courses in various ratio classifications, and it also expresses each ratio group as a percentage of the total course offerings. Fifty-three per cent of all courses fell in the 1.00 ratio group, but forty-seven per cent of the courses exceeded the 1.00 ratio. One per cent of the courses exhibited ratios below 1.00, indicating that sixteen courses allowed one credit hour for less than one contact hour.

TABLE 7

CONTACT-CREDIT HOUR MEAN RATIOS BY SUBJECT MATTER AREAS, MICHIGAN STATE UNIVERSITY

Subject Matter	Ratio
Military Science	2.34
Industrial Arts	2.00
Art	1.98
Chemistry	1.81
Physical Education	1.78
Geology	1.71
Biology	1.69
Agriculture	1.63
Engineering	1.60
Nursing	1.54
Home Economics	1.51
Music	1.47
Physics and Astronomy	1.39
Education	1.32
Speech and Drama	1.25
Political Science	1.23
Geography	1.17
Business Administration	1.15
Languages	1.13
Psychology	1.12
Sociology	1.01
Economics	1.00
English	1.00
History	1.00
Mathematics	1.00
Philosophy and Religion	.94

TABLE 8

RATIO OF SCHEDULED CONTACT HOURS TO CREDIT HOURS BY RATIO GROUPS, NUMBER OF COURSES, AND PERCENTAGE OF TOTAL COURSE OFFERINGS, MICHIGAN STATE UNIVERSITY

Ratio	Number of Courses	Per cent of Courses
Below 1.00	16	.7
1.00	1206	52.9
1.01 - 2.00	919	40.3
2.01 - 3.00	126	5.5
3.01 - 4.00	6	.3
4.00 - 7.00	4	.2
7.01 -31.50	2	.1
Total	2279	100.0

Northern Michigan College

Northern Michigan College had sixteen departments which, converted to the subject matter classifications used in this study, gave this institution representation in twenty-three subject matter areas. Six of the departments carried combinations of subject matter, but as in the previous schools where this condition existed, the subject matter was allocated independently to the proper classification. Appendix E shows the number and percentage of courses by departments exhibiting various ratios of scheduled contact hours to credit hours, and the mean for each of the departments.

Table 9 shows the contact-credit hour ratios by subject matter areas, and it also provides a ranking from

the highest subject matter area (geology, 1.81) to the lowest subject matter area (music, .89).

TABLE 9

CONTACT-CREDIT HOUR MEAN RATIOS BY SUBJECT MATTER AREAS
NORTHERN MICHIGAN COLLEGE

Subject Matter	Ratio
Geology	1.81
Physical Education	1.76
Sociology	1.57
Industrial Arts	1.41
Home Economics	1.35
Biology	1.34
Business Administration	1.33
Chemistry	1.33
Agriculture	1.27
Physics and Astronomy	1.20
Languages	1.13
Education	1.11
Speech and Drama	1.07
English	1.05
Economics	1.02
Geography	1.02
Psychology	1.02
Art	1.00
History	1.00
Library Science	1.00
Mathematics	1.00
Political Science	1.00
Music	.89

Table 10 is the summary of the total courses in the various ratio classifications, and it also expresses each ratio group as a percentage of the total course offerings. Fifty-four per cent of the courses showed a relationship of one contact hour for each credit hour. Thirty-one per cent

showed ratios in excess of the one to one ratio, and fifteen per cent of the courses were below a 1.00 ratio. Of the one hundred and five courses that were listed as having less than a 1.00 ratio of scheduled contact hours to credit hours, all but one of the courses were in the music department. The courses were in "Applied Music - Individual" and granted one hour credit for a half hour lecture and two hours credit for one and one half hours of lecture.

TABLE 10

RATIO OF SCHEDULED CONTACT HOURS TO CREDIT HOURS BY RATIO GROUPS, NUMBER OF COURSES, AND PERCENTAGE OF TOTAL COURSE OFFERINGS, NORTHERN MICHIGAN COLLEGE

Ratio	Number of Courses	Per cent of Courses
Below 1.00	105	14.5
1.00	390	53.9
1.01 - 2.00	215	29.7
2.01 - 3.00	9	1.2
3.01 - 4.00	5	.7
4.01 - 7.00	...	...
7.01 -31.50	...	...
Total	724	100.0

University of Michigan

The University of Michigan had nine different schools with a total of one hundred and one different departments within these schools. When the course offerings listed in the various departments were re-classified into the subject

matter areas, all but three of the twenty-nine study classifications were represented. This university did not have offerings in agriculture, home economics, or occupational therapy. Appendix F shows the number and percentage of courses by schools and departments exhibiting various ratios of contact hours to credit hours, and the mean for each of the schools and departments.

Table 11 shows the contact-credit hour ratios by subject matter areas, and it also provides a ranking of subject matter from the highest (nursing, 3.10) to the lowest (political science, .90). The courses that brought six subject matter classifications to below a 1.00 were professional seminars offering three hours of credit for two contact hours, and most of the courses were restricted to honor students.

Table 12 summarizes the total courses in the various ratio classifications, and it also expresses each ratio group as a percentage of the total course offerings. Fifty-six per cent of the courses used in this study exhibited a ratio of one contact hour for each credit hour. Forty-two per cent of the courses had contact hours in excess of the 1.00 ratio, while two per cent of the courses had below the 1.00 ratio. This school had three thousand three hundred and sixty-three courses included in the study.

Wayne State University

Wayne State University had nine schools, including Monteith College, Air Science, and Mortuary Science. Within

TABLE 11

CONTACT-CREDIT HOUR MEAN RATIO BY SUBJECT MATTER AREAS, UNIVERSITY OF MICHIGAN

Subject Matter	Ratio
Nursing	3.10
Art	2.76
Military Science	2.08
Physical Education	1.99
Chemistry	1.70
Biology	1.69
Pharmacy	1.40
Music	1.37
Geology	1.33
English	1.32
Business Administration	1.19
Speech and Drama	1.19
Psychology	1.15
Physics and Astronomy	1.12
Education	1.07
Economics	1.04
Mathematics	1.01
Sociology	1.01
Languages	1.01
Industrial Arts	1.00
Geography	.99
Library Science	.99
History	.97
Philosophy and Religion	.97
English	.96
Political Science	.90

TABLE 12

RATIO OF SCHEDULED CONTACT HOURS TO CREDIT HOURS BY RATIO GROUPS, NUMBER OF COURSES, AND PERCENTAGE OF TOTAL COURSE OFFERINGS, UNIVERSITY OF MICHIGAN

Ratio	Number of Courses	Per cent of Courses
Below 1.00	53	1.6
1.00	1874	55.8
1.01 - 2.00	1192	35.4
2.01 - 3.00	205	6.1
3.01 - 4.00	25	.7
4.01 - 7.00	14	.4
7.00 -31.50	...	...
Total	3363	100.0

the nine schools were seventy-three departments. The reclassifying of the subject matters within these schools and departments gave Wayne State representation in twenty-eight of the twenty-nine subject matter areas of the study. Agriculture was the only area not represented. Appendix G shows the number and percentage of courses by schools and departments exhibiting various ratios of contact hours to credit hours, and the mean ratio for each of the schools and departments.

Table 13 indicates the contact-credit hour ratios by subject matter areas, and it also provides a ranking of subject matter from the highest (art, 2.35) to the lowest ratio, 1.00, found in five subject matter areas.

TABLE 13

CONTACT-CREDIT HOUR MEAN RATIOS BY SUBJECT MATTER AREAS, WAYNE STATE UNIVERSITY

Subject Matter	Ratio
Art	2.35
Physical Education	1.98
Industrial Arts	1.93
Chemistry	1.71
Biology	1.59
Nursing	1.58
Engineering	1.56
Occupational Therapy	1.50
Education	1.48
Home Economics	1.35
Geology	1.34
Military Science	1.33
Music	1.29
Pharmacy	1.29
Physics and Astronomy	1.28
Speech and Drama	1.08
Sociology	1.04
Business Administration	1.01
Geography	1.01
History	1.01
Mathematics	1.01
Political Science	1.01
Psychology	1.01
Economics	1.00
English	1.00
Languages	1.00
Library Science	1.00
Philosophy and Religion	1.00

Table 14 summarizes the total courses in the various ratio classifications, and it also expresses each ratio group as a percentage of the total course offerings. Seventy-one per cent of the courses in this school exhibited a ratio

of 1.00 based on the relationship of contact hours to credit hours. About twenty-eight per cent of the courses had variations in the relationship of contact hours to credit hours in excess of a one to one ratio. The remaining one per cent of variation was found in five courses below the 1.00 ratio.

TABLE 14

RATIO OF SCHEDULED CONTACT HOURS TO CREDIT HOURS BY RATIO GROUPS, NUMBER OF COURSES, AND PERCENTAGE OF TOTAL COURSE OFFERINGS, WAYNE STATE UNIVERSITY

Ratio	Number of Courses	Per cent of Courses
Below 1.00	5	.3
1.00	1148	70.6
1.01 - 2.00	359	22.1
2.01 - 3.00	87	5.4
3.01 - 4.00	19	1.2
4.01 - 7.00	7	.4
7.01 -31.50	...	...
Total	1625	100.0

Western Michigan University

Western Michigan University had four schools, and within the four schools there were thirty-three departments. The courses in the various departments, when converted into the subject matter classifications of the study, gave Western representation in twenty-six of the areas. There were no courses in engineering, nursing, or pharmacy. Appendix H shows the number and percentage of courses by schools and

departments within the schools exhibiting various ratios of contact hours to credit hours, and the mean ratio for each of the schools and departments.

Table 15 indicates the contact-credit hour ratios by subject matter areas, and it also provides a ranking of subject matter from the highest ratio (physical education, 2.38) to the nine classifications having the lowest ratio, 1.00.

TABLE 15

CONTACT-CREDIT HOUR MEAN RATIOS BY SUBJECT MATTER AREAS, WESTERN MICHIGAN UNIVERSITY

Subject Matter	Ratio
Physical Education	2.38
Industrial Arts	2.36
Chemistry	1.88
Music	1.63
Art	1.60
Biology	1.57
Occupational Therapy	1.47
Military Science	1.38
Home Economics	1.33
Geology	1.25
Physics and Astronomy	1.23
Speech and Drama	1.16
Business Administration	1.12
Geography	1.06
Education	1.05
Psychology	1.05
Agriculture	1.04
Economics	1.00
English	1.00
History	1.00
Languages	1.00
Library Science	1.00
Mathematics	1.00
Philosophy and Religion	1.00
Political Science	1.00
Sociology	1.00

Table 16 summarizes the total courses in the various ratio classifications, and it also expresses each ratio group as a percentage of the total course offerings. Sixty-eight per cent of the courses exhibited a ratio of one contact hour for each scheduled credit hour. Thirty-one per cent of the courses had variations in excess of the one contact hour for each credit hour ratio. Only one per cent of the courses(four) had less than a one to one ratio.

TABLE 16

RATIO OF SCHEDULED CONTACT HOURS TO CREDIT HOURS BY RATIO GROUPS, NUMBER OF COURSES, AND PERCENTAGE OF TOTAL COURSE OFFERINGS, WESTERN MICHIGAN UNIVERSITY

Ratio	Number of Courses	Per cent of Courses
Below 1.00	4	.5
1.00	545	67.7
1.01 - 2.00	193	24.0
2.01 - 3.00	51	6.3
3.01 - 4.00	7	.9
4.01 - 7.00	4	.5
7.01 -31.50	1	.1
Total	805	100.0

Summary

Table 17 provides a summary of all courses by ratio classification, number of courses in each classification, and the per cent of the total number of courses in each ratio classification.

TABLE 17

RATIO OF SCHEDULED CONTACT HOURS TO CREDIT HOURS BY RATIO GROUPS, NUMBER OF COURSES, AND PERCENTAGE OF TOTAL COURSE OFFERINGS, ALL INSTITUTIONS

Ratio	Number of Courses	Per cent of Courses
Below 1.00	193	1.8
1.00	6435	59.7
1.01 - 2.00	3459	32.0
2.01 - 3.00	594	5.5
3.01 - 4.00	63	.6
4.01 - 7.00	30	.3
7.01 -31.50	5	.1
Total	10,779	100.0

Sixty per cent of all courses offered one credit for each scheduled contact hour, but thirty-eight per cent, or 4,151 courses, had contact hours in excess of assigned credit hours. Two per cent of the courses, one hundred ninety-three, allowed credit in excess of the number of contact hours. Chapter IV will be devoted to an analysis of the ratios as expressed in the various subject matter areas to discover if there are basic patterns of relationship between scheduled contact hours and credit hours.

CHAPTER IV

PRESENTATION AND EXPLORATION OF COMPARATIVE DATA BETWEEN INSTITUTIONS

CHAPTER IV

PRESENTATION AND EXPLORATION OF COMPARATIVE DATA BETWEEN INSTITUTIONS

Classification of Subject Matter Data

Chapter III provided the individual institutional data concerning the relationships that existed between the scheduled contact hours and the credit hours in twenty-nine subject matter areas within the eight schools involved with the study. The stated purpose of the study is to determine the relationship, if any, between the subject matter areas in all institutions as they relate to the various ratios exhibited between scheduled contact hours and credit hours. To make such a comparison more meaningful, the twenty-nine subject matter areas were further classified into four groups. These groups were (1) humanities, (2) sciences, (3) social sciences, and (4) technical and professional.

Included in the humanities were the subject matter areas of art, English, languages, music, philosophy and religion, and speech and drama. The science group included biology, chemistry, geography, geology, mathematics, physics and astronomy, and psychology. The social science group included economics, history, political science, and sociology. The technical and professional group included agriculture, business administration, education, engineering, home

economics, industrial arts, library science, military science, nursing, occupational therapy, pharmacy, and physical education.

To further stratify the data for comparison purposes, the eight schools being analyzed were grouped as (1) teacher training, (2) technical, and (3) multi-purpose. The four teacher training institutions included Central Michigan University, Eastern Michigan University, Northern Michigan College, and Western Michigan University. Although the programs in each of these institutions have been expanded considerably from the original offerings, the major enrollments continue to be in the teacher education area. Thus, these schools might exhibit similar characteristics in program offerings.

A second group of schools included the University of Michigan, Michigan State University, and Wayne State University. All three institutions offered a wide range of diversified subject matter and educational programs. The University of Michigan, the largest and oldest university in the study, presented the widest range of offerings, extending from liberal arts training to several of the professional fields.

Michigan State University, established in 1855 as a Land Grant College under the Morrill Act, had as an initial objective the teaching of such branches of learning as were related to agriculture and mechanical arts to promote the liberal and practical education of the industrial classes.

This is stated in the University catalog:

> To accomplish this end in the context of a developing society this university has established strong liberal arts programs in the scientific and humanistic fields and has emphasized the practical nature of vocational and professional curricula appropriate to the educational needs of the people of the state.[25]

with such stated objectives, one might expect to find some variations in course offerings of this institution as compared to a teacher training institution, or even a technical institute.

Wayne State University was established as the Detroit Medical College in 1868, and in 1881 the Detroit Normal Training School was established. The institution now offers training in medicine, pharmacy, engineering, liberal arts, business, law, nursing, and social work. In 1956, Wayne University became Wayne State University, a state operated institution of higher education created by Act 183 of Michigan Public Act of 1956.

Michigan College of Mining and Technology was designated as a technical school in the study. This institution was established in 1885 as a mining engineering school. Today it has ten branches of engineering and seven branches of science. It is not, therefore, comparable with any of the other state institutions.

The grouping of the twenty-nine subject matter areas into the social sciences, humanities, sciences, and technical and professional areas, and the grouping of the eight schools

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[25] Michigan State University Catalog, 1958-1959, op. cit., p. 15.

into three different categories permitted an examination of the relationships of scheduled contact hours to credit hours as they existed at the time of the study.

Table 18 exhibits the ratios of scheduled contact hours to credit hours by subject matter areas, institutions, and group classifications. In computing the mean ratios shown in Table 18, the ratios of the separate courses were added and divided by the number of courses in the department, area, or institution. Thus, all mean ratios exhibited have been calculated by use of the ratios of the several courses on which the mean ratio is based.

The following observations were made based on this data.

Social Sciences

The social sciences, in this study consisting of economics, history, political science, and sociology, exhibited the lowest ratio of scheduled contact hours to credit hours for any division, 1.03. This information follows the pre-conceived idea that courses in these areas are normally offered on a one for one basis, one hour of contact for each hour of credit in the form of lecture, laboratory, or recitation. The only ratios less than 1.00 in this group were found at the University of Michigan in history and political science. The University had seven history offerings exhibiting a .67 ratio and dealing with the study of various countries, and for the courses allowed three credit hours for two scheduled hours of lecture. Included were such courses

TABLE 18

THE RELATIONSHIP OF SCHEDULED CONTACT HOURS TO CREDIT HOURS BY SUBJECT MATTER AREA, INSTITUTION, AND GROUP CLASSIFICATION

Subject Matter	Cent Mich Univ	East Mich Univ	North Mich Coll	West Mich Univ	Mich Coll M &T	Mich Stat Univ	Univ of Mich	Wayne State Univ	All Inst Mean
Social Sciences									
History	1.00	1.00	1.00	1.00	1.00	1.00	.97	1.01	.99
Economics	1.00	1.00	1.02	1.00	....	1.00	1.04	1.00	1.01
Political Science	1.00	1.00	1.00	1.00	....	1.23	.90	1.01	1.04
Sociology	1.00	1.00	1.57	1.00	....	1.01	1.01	1.04	1.07
Mean	1.00	1.00	1.18	1.00	1.00	1.05	.98	1.02	1.03
Humanities									
Phil and Religion	1.00	1.00	....	1.00	....	.94	.97	1.00	.97
English	1.03	1.00	1.05	1.00	1.21	1.00	.96	1.00	1.02
Languages	1.00	1.73	1.05	1.00	1.00	1.13	1.01	1.00	1.08
Speech and Drama	1.02	1.00	1.07	1.16	....	1.25	1.19	1.08	1.14
Music	1.38	2.09	.89	1.63	....	1.47	1.37	1.29	1.31
Art	1.56	1.86	1.00	1.60	....	1.95	2.76	2.35	2.09
Mean	1.16	1.54	.97	1.24	1.11	1.29	1.37	1.24	1.26

TABLE 18 - Continued

Subject Matter	Cent Mich Univ	East Mich Univ	North Mich Coll	West Mich Univ	Mich Coll M &T	Mich Stat Univ	Univ of Mich	Wayne State Univ	All Inst Mean
Sciences									
Mathematics	1.07	1.00	1.00	1.00	1.01	1.00	1.01	1.01	1.01
Geography	1.05	1.10	1.02	1.06	....	1.17	.99	1.01	1.06
Psychology	1.07	....	1.02	1.05	1.00	1.12	1.15	1.01	1.07
Physics and Astr	1.42	1.28	1.20	1.23	1.25	1.39	1.12	1.28	1.24
Geology	1.14	....	1.30	1.25	....	1.71	1.33	1.34	1.34
Biology	1.61	1.54	1.34	1.57	....	1.69	1.69	1.59	1.64
Chemistry	1.69	1.67	1.33	1.88	1.67	1.81	1.70	1.79	1.72
Mean	1.35	1.39	1.17	1.32	1.39	1.54	1.32	1.32	1.37
Tech and Profess									
Library Science	1.17	1.07	1.00	1.00	1.00	....	.99	1.00	1.03
Business Admin	1.12	1.25	1.33	1.12	1.00	1.15	1.19	1.01	1.14
Occupational Therapy	....	1.06	....	1.47	....	....	....	1.50	1.28
Education	1.07	1.03	1.05	1.05	....	1.32	1.07	1.48	1.30
Pharmacy	....	....	....	....	....	....	1.40	1.29	1.34
Home Economics	1.32	1.31	1.35	1.33	....	1.51	....	1.35	1.41
Engineering	....	....	....	....	1.48	1.45	1.32	1.56	1.50
Agriculture	1.13	....	1.27	1.04	....	1.63	....	....	1.56
Industrial Arts	1.54	1.00	1.41	2.36	....	2.00	1.00	1.93	1.72
Nursing	....	....	....	....	....	1.54	3.10	1.58	1.89
Physical Education	1.63	2.07	1.76	2.38	2.00	1.78	1.99	1.98	1.94
Military Science	2.34	1.63	....	1.38	2.34	2.34	2.08	1.33	2.08
Mean	1.37	1.50	1.38	1.57	1.61	1.40	1.29	1.47	1.45

as "Study in British Empire," "Studies in Post-Mutiny History of India," "Studies in Japanese History," and "Studies in History of Communist Party of the Soviet Union". No reason was given for the contact-credit hour arrangement as it existed.

Michigan State University exhibited a relatively high ratio in political science, 1.23, but the courses evidently were atypical in that they incorporated supervised field work in public administration. These courses, not to be found in most of the other colleges, would be in keeping with the stated objectives of this institution. The courses ranged from three hours credit with one hour of lecture and ten hours of laboratory, to six hours of credit with one hour of lecture and twenty hours of laboratory. A student would appear to pick up two additional hours of credit by doing ten more hours of laboratory work because the lecture time remained the same. According to the course description, the laboratory work was actual work experience.

The University of Michigan exhibited a .90 ratio in political science. Eighteen political science courses exhibited ratios of .67 and were primarily honors courses or professional seminars. The usual arrangement for these offerings was three credit hours for two hours of lecture. Some of the courses involved were "Scope and Method of Political Science," "Prosem in Middle Eastern Political Institutions," "Prosem in Government and Politics of the Soviet Bloc," and "Prosem in Comparative Public Administration". Political

science and history exhibited about the same contact-credit hour arrangement in this institution.

The only other discipline in the social sciences that had a ratio in excess of 1.00 was sociology. The increase in the ratio was the result of field laboratory experience exhibited by Northern Michigan College and offered on the basis of one credit hour for four hours of field work, or two credit hours for eight hours of field work.

With relatively few exceptions as noted, the social sciences exhibited a one to one relationship of scheduled contact hours to credit hours. Deviations from this pattern seemed explained by the special nature of course being offered.

Humanities

The humanities, represented in this study by subject matter areas of art, English, languages, music, philosophy and religion, and speech and drama, exhibited a ratio of 1.26. Most courses in languages, philosophy and religion, English, and speech and drama followed the regular pattern for lecture-credit arrangement based on one hour of contact for each hour of credit in lecture, recitation, or laboratory work. There were a few courses in philosophy and religion at the University of Michigan and Michigan State University, language courses at Eastern Michigan University, and English courses at Northern Michigan College which warrant comment.

The philosophy and religion courses at the University of Michigan were seminar in nature and included metaphysics, ethics, and communicative sciences. Michigan State University

had a 1.00 ratio in religion but a .90 ratio in philosophy. Sixteen courses at the four hundred level had ratios of .75. From the published information there was evidently considerable outside reading required in these courses, but there was no specific statement regarding the number of hours that must be spent outside the classroom.

Eastern Michigan University presented a 1.73 ratio in languages, but the excess contact hours were created by laboratory work in the various foreign languages. The laboratory work involved time spent in recording studios listening to and recording foreign language assignments. There were other schools in the study that offered foreign language laboratory work, but the official published information did not indicate whether all such laboratory work was scheduled. In any case, the data available indicated that Eastern Michigan University required the highest number of scheduled contact hours for credit hours in the foreign language area.

A journalism course at Northern Michigan College exhibited a ratio of 4.00 based on one credit for one hour of lecture and three hours of laboratory or staff meetings with members of the school newspaper staff.

Music and art, the two remaining humanities listed in this study, definitely exhibited wide variations in the relationship of scheduled contact hours to credit hours. By way of example, Eastern Michigan University exhibited a ratio of 2.09 in music, created primarily by the practice of granting one-half hour credit for two hours of lecture in choral and instrumental work. On the other extreme, Northern

Michigan College assigned one hour of credit for one-half hour of lecture in the areas of applied music on an individual basis. Applied ensemble, choral, and band seemed to offer the range of various ratios other than 1.00 in the music area.

Wayne State University offered seven music courses involving individual instruction, and the courses were listed as being taken outside the university, staffed by faculty members, and scheduled under the music department. These courses were not included in the study tabulations, but it would be interesting to examine the faculty load and cost allocation for these offerings. Western Michigan University carried all applied music courses on an arranged basis, and thus were not included in the study.

Art, with a ratio of 2.09, had the highest ratio of subject matter areas in the humanities group. Some of the beginning courses in the fine arts, including painting, drawing, and sculpturing, exhibited ratios close to 1.00, but most of the applied arts courses displayed a wide range of ratios. The University of Michigan had the highest ratio, 2.76, with seventy courses at the 3.00 level including art, art education, city planning and design, and drawing, all under the School of Architecture and Design. Also, there were offerings in basic studio, introduction to interiors, mechanical drawing, lettering, ceramics, and photography that exhibited high ratios.

Northern Michigan College, while offering only twenty-four art courses, offered some similar (at least according to

the published information) to those found at the University of Michigan, but did so at the 1.00 level. The all-institutional mean ratio in art of 2.09 suggested that if one follows the usual pattern of increased laboratory work for the applied fields, the majority of the art courses offered in the eight institutions must be in the applied art area.

Sciences

The sciences, with representation of subject matter areas in the so-called pure sciences, biological sciences, and physical sciences, ranked third in the study with a mean ratio of 1.37. Mathematics, representing pure science, exhibited a ratio of 1.01.

Central Michigan University was the only school showing a noticeable variation in mathematics, and this involved only two courses at the lower level. One of the courses, "Remedial and Functional Mathematics," required five contact hours and allowed three credits. The course description noted that the course was designed to give the student an opportunity to remedy his defect in the use of fundamentals, to provide the necessary mathematical tools for the work of the elementary curriculum, and to acquaint the student with some of the social and economic applications of mathematics. This course did not give credit on a mathematics major or minor in the secondary curriculum.

Geography, from the physical sciences, and psychology, from the biological sciences, exhibited almost identical ratios of 1.06 and 1.07 respectively. In geography, most of

the courses that involved additional scheduled contact hours over and above the credit hours were found in map making, field laboratory experience, and the use of cartographic tools. The University of Michigan, with a .99 ratio in geography, offered only one course that did not exhibit a 1.00 ratio. This was not, as might be expected, a course in map making, but a seminar in the "Metropolitan Community," and allowed three hours credit for two hours of lecture. If field work was required, it was not made evident in the course description. Wayne State University also offered one course in physical geography that carried four hours credit for three hours of lecture.

The areas of experimental, applied, and clinical psychology caused an all institutional mean of 1.07 in this science. This pattern of variations in the contact-credit hours seemed to prevail in most of the institutions.

Geology, a physical science, exhibited a 1.34 ratio. Michigan State University, with a ratio of 1.71, offered most of the geology courses on a 3(2-4) basis, and did not publish the assigned number of hours for field work in the courses requiring field assignments. Wayne State University also offered field courses with arranged hours. The geography and geology offerings at Michigan College of Mining and Technology were included as engineering because they were called geographical and geological engineering.

As might be expected, the laboratory sciences, represented by physics and astronomy, biology, and chemistry,

exhibited ratios in excess of 1.00. The physical and biological sciences were both represented in these high ratio subject matter areas, and it appears that there were no definite patterns for the contact-credit hour arrangements in either group. Central Michigan University granted one hour credit and required two and three hours of laboratory work in two specific physics courses. All of the credit for this course was granted on laboratory work. Although not a definite pattern, two hours of laboratory work seemed common for the physics courses, regardless of the number of credit hours granted.

Biology, with a 1.64 ratio of scheduled contact hours to credit hours, seemed to increase the required contact hours in the form of additional laboratory work and an additional hour of lecture as the fields of specialization were introduced. The ratios used for the general field of biology, included, whenever offered, the areas of zoology and botany, plus such specialized fields as entomology and ornithology. Three to four hours of laboratory work and two hours of lecture were rather common arrangements for the granting of three or four hours of credit.

Chemistry, with the highest ratio of the sciences, 1.72, did exhibit some rather uniform patterns between the various institutions for three of the major course areas in this field. Three specific courses were, for the purposes of this study, equal in all institutions. These courses were "General Chemistry," "Qualitative Analysis," and "Quantitative Analysis". General Chemistry, offered by all eight

institutions, exhibited ratios that fell between 1.50 and 2.00. Seven colleges, the exception being Wayne State University, offered four credit hours for six and seven hours of lecture and laboratory work. Wayne State University offered six hours of credit on a 6(4-2-3) basis, which still gave a General Chemistry ratio of 1.50, and the ratio was in line with those in most of the other institutions for this subject matter.

In Qualitative Analysis, the ratio of scheduled contact hours to credit hours moved up to a range of 1.25 to 3.00 as compared to 1.50 to 2.00 for General Chemistry. The University of Michigan exhibited the highest ratio with an arrangement of 3(2-1-6) or 3.00; while Northern Michigan College had the lowest ratio, 1.50 based on a 4(2-4) arrangement. All institutions, with the exception of the University of Michigan, granted four hours of credit on a scheduled contact arrangement, totaling eight or nine hours. Western Michigan University exhibited the lowest ratio in this area, 1.25, allowing four hours of credit and requiring only two hours of lecture and three hours of laboratory work.

Quantitative Analysis, with the exception of Northern Michigan College, exhibited ratios in a range of 2.20 to 2.75. Northern Michigan College allowed five hours credit for two hours of lecture and six hours of laboratory work for a 1.60 ratio. Four hours of credit were granted in four schools, while three gave five hours credit for this course. Michigan State University gave three credit hours, the lowest

for this course, and required one hour of lecture and six hours of laboratory work for a ratio of 2.33. The ratio was not out of line with the majority of the other school ratios. It should be noted that with the higher ratios exhibited in quantitative analysis, as compared to general chemistry and qualitative analysis, more scheduled contact hours seem necessary to accomplish quantitative chemical analysis than in the other two areas.

Central Michigan University and Wayne State University offered scheduled laboratory courses in organic chemistry, and both offered the laboratory on a 4.00 ratio. Central Michigan University allowed two hours credit for eight hours of laboratory work, while Wayne State University allowed two hours credit but required one hour of lecture and seven hours of laboratory.

Technical and Professional

The technical and professional group included twelve subject matter areas and exhibited a mean ratio of 1.45 in the relationship of scheduled contact hours to credit hours. This ratio was, according to the published information, the highest ratio for all groups involved in the study. It was rather difficult to assign some of the subject matters to this grouping, but it was felt that the areas of agriculture, engineering, and industrial arts could be classified as being technical in nature; while library science, business administration, education, pharmacy, occupational therapy, home economics, military science, physical education, and nursing could be classified as professional fields.

Technically oriented courses might be expected to exhibit higher ratios of contact-credit hour relationships than any other courses. This did not prove to be the fact. Agriculture with a ratio of 1.56, engineering with a ratio of 1.50, and industrial arts with a ratio of 1.72 are comparable to subject matter areas in the sciences and the humanities. Biology and chemistry from the sciences, and art from the humanities exhibited ratios that were similar to the technical course offerings as related to scheduled contact hours and credit hours.

Agriculture was offered by four institutions, but Michigan State University provided the only comprehensive coverage for this subject matter area. Central Michigan University offered sixteen courses, Northern Michigan College had twelve offerings, Western Michigan University had thirteen courses, and Michigan State University had two hundred and eighty-seven courses. The departments of Resource Development, Agricultural Engineering, Animal Husbandry, and Packaging all exhibited ratios in excess of the 1.72 ratio in chemistry, the highest exhibited subject matter ratio in the sciences. The animal husbandry courses at Northern Michigan College were offered on a 1.00 basis, and similar courses in animal husbandry at Michigan State University carried a 1.80 ratio. The practice and application courses again required the additional hours of scheduled contact work for credit hours granted.

Four institutions offered engineering programs, Michigan College of Mining and Technology, Michigan State

University, the University of Michigan, and Wayne State University. These four institutions, offering five basic engineering areas, chemical, civil, electrical, mechanical, and metallurgical, were examined for the existing ratios of scheduled contact hours for credit hours.

In chemical engineering, Michigan College of Mining and Wayne State University had identical ratios of 1.67 for the relationship of scheduled contact hours to credit hours, while Michigan State University and the University of Michigan had ratios of 1.37 and 1.33 respectively.

Civil engineering exhibited a wide range of ratios, from a low of 1.07 at Michigan State University, to a high of 1.81 at Wayne State University. Civil engineering probably had the broadest field in the engineering area by the nature and types of large structures studied. Topography mapping, designing and drafting, and field work seemed to be the areas that exhibited ratios in excess of 1.00.

Electrical engineering ratios were reasonably balanced with 1.35 to 1.48 ratios in all schools except Wayne State University. A common pattern at Wayne, with a 1.64 ratio, was four hours of credit for either three or four hours of lecture and four hours of laboratory work.

Mechanical engineering displayed another two school pattern. Michigan College of Mining and Technology and Michigan State University exhibited ratios of scheduled contact hours to credit hours between 1.52 and 1.59, while the University of Michigan and Wayne State University had ratios of 1.11 and 1.19 respectively. Part of the explanation

for this wide variation in ratios could be explained by the fact that the low ratio schools had several laboratory courses on an arranged basis with hours not specified, while the higher ratio schools had the laboratory work on an assigned basis.

The metallurgical engineering area presented three institutions in the 1.31 to 1.38 ratio group, and the fourth school, Wayne State University, exhibited a 1.63 ratio. There was no apparent reason for this differential.

The industrial arts subject matter area also provided a wide range of ratios, from 1.00 to 2.35. Eastern Michigan University and the University of Michigan were the only two institutions offering courses in this field with a ratio of one scheduled contact hour for each credit hour. The only pattern that did seem to appear involved a 1.00 ratio for the educational courses in this classification. Those courses dealing with the arts, crafts, wood-working, metals, leather work, plastics, and electricity required contact hours in excess of the hours of credit granted. All institutions did not list some of the hours for the coordinated industry courses. Wayne State University had all work experience on an arranged basis, while Western Michigan University had two courses with coordinated industrial experience, both offered on a 3(0-20) basis. There seemed to be very little uniformity among the institutions on the relationship of scheduled contact hours to credit hours in this subject matter area.

In the professional group the subject matter areas might be expected to vary with the type of professional

training involved. Library science offered courses primarily on a relationship of one scheduled contact hour for each credit hour. With an all institutional mean of 1.03, there were only two slight variations exhibited in all seven institutions offering this program. Central Michigan University, with a 1.17 ratio, had two courses that involved supervised practice under actual library conditions, and granted two hours of credit for four hours of laboratory work. There were no lectures scheduled. The University of Michigan offered a course in "History of Books and Printing" for three credit hours, and met in lecture session for a period of two hours once per week. This information indicated that library science, with exceptions as noted, basically exhibited a 1.00 ratio.

Business administration, or commerce, with a ratio of 1.14, had only three areas that were not offered on a ratio of one scheduled contact hour for each credit hour. Accounting laboratory work existed in three schools, and required one hour of laboratory work in excess of the lecture hours and assigned credit for the courses. Secretarial sciences and the office records or office management courses also required more scheduled contact hours than credit hours granted. In several of the course descriptions for various typewriting courses, there were no lecture sessions scheduled, but the hours were established on either a recitation or laboratory basis. There was no explanation given for the necessity of attending typing class for five periods per week in order to

obtain two or three hours of credit. Even a student who acquired the skill of typing with ease and rapidity was required to attend class five times per week.

Western Michigan University offered courses in coordinated retail experience, but all of the experience hours were on an arranged basis, so the courses were not included in this study. At this institution the students were informed through departmental advisors that to complete the cooperative program they must have two hundred supervised hours of work experience for a maximum of four hours of credit. This was not stated in the official publication of this institution, but the situation was known to exist. There were other courses in other institutions that had similar provisions, but the credits and hours were arranged, and therefore were not included in this study.

The education area presented some noticeable variations, but these variations had some measure of explanation. With the exception of Northern Michigan College, the other three teacher training institutions exhibited ratios which were comparable. Northern Michigan College offered several different teaching courses that were on a 4(5-2) or 4(5-1) basis. Included were such courses as "Teaching in Elementary Schools," and "The Teaching of Special Subjects". Michigan State University and the University of Michigan, with ratios of 1.32 and 1.48 respectively, were noticeably higher than the other schools. The vocational education and methods courses caused the higher ratios. In the industrial arts

courses in education, the University of Michigan exhibited a 1.00 ratio, while Michigan State University had a 2.00 ratio. No explanation was apparent for this difference.

Wayne State University, exhibiting a ratio of 1.48 for scheduled contact hours to credit hours, had several courses in art education and industrial education that were offered on a 2(2-2) basis. Such courses represented the arts and crafts and the vocational type subject matter. In general, the teaching activity courses and the methods courses required scheduled contact hours in excess of the credit hours.

Pharmacy was offered by only two schools, the University of Michigan and Wayne State University. Considering pharmacy to be in the scientific area of chemistry, one would expect the subject matter ratios of the course offerings to present a high relationship of scheduled contact hours to credit hours as exhibited in chemistry. This was not the case. The University of Michigan had a ratio of 1.40, while Wayne State University had a ratio of 1.29. It was noted that the courses which did bring the ratio up were in pharmaceutical biological science and pharmaceutical chemistry.

Occupational therapy was offered in three schools, namely Eastern Michigan University, Western Michigan University, and Wayne State University. Eastern Michigan University exhibited the lowest ratio with a 1.06, but it was understandable because all of the crafts courses necessary in this program were offered on a 1.00 basis. Western Michigan University,

with a 1.47 ratio of scheduled contact hours to credit hours, had most of the crafts courses on a 2.00 basis. Therapeutic activity courses granted two hours of credit for six hours of lecture. Wayne State University had the highest ratio, 1.50. The courses in techniques, procedures, and medical lectures were offered on a 2(4-0) arrangement. It was somewhat surprising to find the ratios in this area as low as evidenced because it might be expected that a branch of physical medicine follow the higher ratio pattern of some of the other sciences.

Six schools offered subject matter areas in home economics, and, although all of the schools exhibited relationships of scheduled contact hours to credit hours in excess of 1.00, the ratios, with the exception of Michigan State University, were almost identical. The range of ratios for five of the schools was from 1.31 to 1.35. Michigan State University had a ratio of 1.51. An examination of the course offerings in that institution revealed that some of those with high ratios were found in the department of institutional administration, not offered in any other school. There were two particularly unusual courses in commercial cookery offered on a 3(1-6) basis. In the food nutrition department there were courses in experimental cookery which granted four hours of credit for two hours of lecture and six hours of laboratory work, and a second course that granted four hours of credit, required one lecture session, and had nine hours of laboratory work. In most of the institutions the ratios were over 1.00

for the study of nutrition, cookery, dressmaking, home furnishings and management, domestic finance, child care, hygiene, and handicrafts.

Military science, for the purposes of this study, included all branches of the services. Northern Michigan College was the only school not offering this subject matter area. Only five courses were offered in all of the institutions on a one hour contact for one hour credit basis. Three of the institutions had identical ratios of 2.34, and they had courses allocated on 1.67 and 3.00 arrangements. Three of the other institutions ranged from 1.33 to 1.63, and there did not appear to be any specific pattern or reason for the contact-credit hours as they were offered.

Physical education, with a ratio of 1.94 exhibited in the relationship of scheduled contact hours to credit hours, was the highest ratio subject matter area offered by all eight institutions in this study. The dispersion of the ratios for the schools in this subject matter area was not really wide, with a low of 1.63 for Central Michigan University, and a high of 2.38 for Western Michigan University, but the various patterns required to receive credit for courses offered in this area lack any semblance of standardization.

In keeping with the established goals of physical education, the majority of the course offerings were in the "activity" and professional classifications. From the published information of the institutions, there was no uniformity in describing the activity courses, but the professional courses were offered by most of the colleges and universities

on a basis of one contact hour for each hour of credit.

There was not complete uniformity among the institutions regarding the offering of academic credit for physical education courses. At Central Michigan University, the physical education activity classes counted as a part of the regular academic load, and a student had to take four semester hours of activity; however, the student could substitute military science for a portion of the required activity credits. At Eastern Michigan University, three activity hours were required for one credit hour. These courses did not count on the student's point hour ratio, but such courses were required for graduation. Northern Michigan College listed activity courses for non-academic credit, and all majors and minors in health, physical education, and recreation were required to complete one unit of credit each semester for a total of eight units.

Western Michigan University, with a 2.38 ratio of scheduled contact hours to credit hours, exhibited the highest ratio in the physical education subject matter area. The general physical education courses were offered on a 3.00 basis, 1(3-0), and the series of courses in physical education theory and practice carried ratios of 3.50.

Michigan State University, the University of Michigan, and Wayne State University followed the patterns of the other institutions in that the activity courses were well over the 1.00 ratio, and the professional courses usually were offered on a one contact hour for each credit basis.

Michigan College of Mining and Technology offered only ten physical education courses and all of them were on a 2.00 ratio basis.

Nursing was offered by only three schools in the study, Michigan State University, the University of Michigan, and Wayne State University. It was difficult to make any comparisons in this field because nine of the thirteen courses offered at Michigan State University were on an arranged basis as far as scheduled contact hours were concerned. The 3.00 ratio at the University of Michigan resulted from clinical work meetings involving twenty-five hours each week plus a two hour lecture and a two hour laboratory session.

Comparisons between Types of Institutions

The preceding discussion provided a comparison of the various twenty-nine subject matter ratios representing the relationship of scheduled contact hours to credit hours in the eight institutions involved in the study. Those ratios that exhibited noticeable variations from all-institutional means were examined and explained in so far as possible from the official published information of each institution.

An analysis was made of the exhibited ratios of all institutions to discover if there were any patterns regarding contact-credit hour relationships in subject matter groupings by type of institution. Considering type of institution as the basis for comparison of exhibited subject matter ratios, it was evident, from the information available, that similarities of ratios were of a random nature, and that any similarity

or variation in subject matter ratios was not attributed to the type of institution exhibiting the ratio.

By way of example, in the social sciences, all teacher training institutions exhibited a one to one contact-credit hour ratio with the exception of Northern Michigan College, which exhibited a ratio of 1.18. Michigan College of Mining and Technology also exhibited a 1.00 ratio. None of the three large multi-purpose institutions exhibited ratios of 1.00 in the social sciences, but had ratios ranging from .98 to 1.05. Although their mean ratios were not 1.00, none of the exhibited ratios were as high as Northern Michigan College of the teacher training group.

Another illustration of the random nature of the variations among institutions and subject matter groupings was found in the sciences. All of the institutions exhibited mean ratios in excess of one contact hour for each credit hour, but, with the exception of two institutions, the mean ratio showed only slight variations between types of institution. Northern Michigan College, from the teacher training group, exhibited a significantly lower mean ratio than did any other type of institution; while Michigan State University, a multi-purpose institution, exhibited a significantly higher ratio than any other institution, regardless of type.

No published information explained these variations, but a uniform pattern for exhibited ratios within subject matter groupings by type of institution was not evident.

Exploration of Causes for Ratio Variations

From the information that was available in the official published materials of the institutions involved in this study, it was apparent that various subject matter areas exhibited ratios of scheduled contact hours to credit hours in excess of 1.00. Since official published statements do not adequately explain the contact-credit hour arrangements, an attempt was made to discover the reasons, if any, for the offering of courses that exhibited ratios in excess of one scheduled hour for each credit hour.

The original plan of this study included personal interviews with those deans and/or heads of departments whose subject matter areas exhibited ratios in excess of the 1.00 relationship of scheduled contact hours to credit hours, to ascertain any possible cause for these exhibited variations. Preliminary interviews with several department heads within one institution offered little, if any, information that would add clarification to the various contact-credit hour offerings within the specific areas. A special effort was made to establish rapport during these interviews, but even the slightest mention concerning additional hours of scheduled contact work for credit hours seemed to create a noticeable defensive attitude on the part of the interviewee. The statements of those interviewed became generalizations. It seemed reasonable to assume therefore, that exploration of this type would not provide accurate or valid data for this study and the interviewing was terminated. Irritation of those interviewed,

rather than enlightenment of the researcher seemed to be the only result.

Since the institutions involved in this study were members of various accrediting associations, by institutions, colleges, and specialized fields of interest, the published requirements for accreditation in various subject matter areas were investigated to see whether certain contact-credit hours were prerequisites for accreditation within specified areas. Blauch,[26] writing in Accreditation in Higher Education, defines accreditation as the recognition accorded to an institution that meets the standards or criteria established by a competent agency or association; its general purpose is to promote and insure high quality in education programs. Most of the technical and professional areas in education had accrediting associations with published requirements and standards for those that would seek accreditation in respective areas.

An investigation of the published accrediting requirements for various fields revealed that specific statements existed relative to such things as faculty load, terminal degrees, library facilities, total number of hours required for graduation, physical facilities, and, in some instances, specific course content. There was a noticeable absence of specific statements relating to the assignment of scheduled contact hours as related to credit hours in the accrediting

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[26]Blauch, Lloyd E. Accreditation in Higher Education U. S. Department of Health, Education, and Welfare, (Washington, D. C.: Government Printing Office), 1959.

publications. Two exceptions to this procedure were found in the subject matter areas of chemistry and music.

The American Chemical Society Committee on Professional Training established the following standards to be used in evaluating undergraduate professional training in chemistry:

> The minimum course requirements in chemistry for the bachelor's degree consists of four basic year-courses in general chemistry, analytical chemistry, physical chemistry, and organic chemistry, together with at least one year of advanced work. Any deficiency in lecture-recitation or in laboratory time in any of the basic year courses should be compensated for by a corresponding increase in a more advanced course in the same related major area. The courses should meet the following general requirements:
>
> 1. General chemistry which may include qualitative analysis, comprising the equivalent of thirty weeks (one year's instruction exclusive of the examination period at the end of each semester) of instruction with three hours of lectures or recitations a week, and four to six hours of laboratory a week.
> 2. Quantitative analysis, comprising the equivalent of thirty weeks of instruction with not less than eight hours a week of which two hours will be normally devoted to discussion of principles. This course should include some training in qualitative analysis, if this subject is not covered in the course in general chemistry or in a separate required course.
> 3. Physical chemistry (quantitative analysis, a year of general college physics, and a year of differential and integral calculus are prerequisites), comprising the equivalent of thirty weeks of instruction with three lectures or recitations a week and three hours of laboratory a week. This course should be presented in such a way that calculus is used by the student in the solution of the problems.
> 4. Organic chemistry, comprising the equivalent of thirty weeks of instruction, with three hours of lectures or recitations a week and five to six hours of laboratory a week. This course should contain organic preparations work and should include some qualitative organic analysis unless a special course covering this subject is required.[27]

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[27]American Chemical Society. Minimum Standards Used as Criteria in Evaluating Undergraduate Professional Training in Chemistry. A Report Prepared by the American Chemical Society Committee on Professional Training. New York: 1954, p. 5.

The above statements relative to chemistry courses were more specific than most other published standards with reference to scheduled contact hours, and this was reflected by the similarity of the contact-credit hour ratios in the course offerings in this subject in all institutions. There was no specific statement as to the number of credits assigned for the various courses, and such terms as "not less than eight hours per week" suggested that additional hours of some description might be expected as a matter of local institutional policy.

In music, the National Association of Schools of Music had been designated by the National Council on Accreditation as the agency responsible for accreditation of music to the regional associations and to work with the National Council on Accreditation for Teacher Education in the area of Music Education. The bulletin of the National Association of Schools of Music offered this information relative to the general requirements for graduation from curricula leading to the baccalaureate degrees in music:

Semester Hours.

1. In class subjects such as harmony, history of music, etc., and academic subjects, one semester hour of credit shall be given for one period of recitation (50 minutes) plus two hours of preparation each week of a semester, inclusive of examinations. In subjects such as ear training, sight singing, dictation, and ensemble, where little outside preparation is required, two 50-minute recitation periods per week shall be required for one semester hour of credit.

2. It is recommended that one semester hour credit shall be given for each three hours per week of practice, plus the necessary individual instruction, with a maximum

> of six credits per semester allowed for the major subject in applied music. It is understood that the credit is not earned unless the final examination is passed. Students shall be required to take a minimum of one hour (60 minutes) individual instruction per week in the major subjects in applied music throughout each year of residence.[28]

Evidently the accrediting requirements were interpreted in various ways in the institutions involved in this study because the range of variations exhibited in music in the relationship of scheduled contact hours to credit hours was the greatest of any exhibited in the study. It would seem that there was some degree of flexibility exercised at the institutional level, and that the individual institutions could still comply with the published accrediting standards.

From the published information by accrediting associations, there was little evidence of specific requirements relating to the required scheduled contact hours to credit hours granted in specific subject matter areas. Further search indicated that there was very little published information available from any source that would provide a better understanding as to the reasons for establishing the various relationships of scheduled contact hours to credit hours as they were exhibited in this study.

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[28]National Association of Schools of Music. National Association of Schools of Music, By-Laws and Regulations, 1959. Washington, D. C., 1959, p. 51.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The stated purpose of this study was to determine the relationship of scheduled contact hours to credit hours, including lecture, laboratory, and recitation; and to explore the reasons for the existence of various contact-credit hour ratios as they existed in defined subject matter areas in eight state colleges and universities in the state of Michigan.

The institutions in the study included (1) Central Michigan University, (2) Eastern Michigan University, (3) Michigan College of Mining and Technology, (4) Michigan State University, (5) Northern Michigan College, (6) University of Michigan, (7) Wayne State University, and (8) Western Michigan University.

The official publications of the above institutions, including bulletins, catalogs, and class schedules, served as the basis for the raw data of the study. All courses listed in the official publications of the various institutions were included in the study with the exception of graduate courses, courses with arranged hours, variable credit courses, and non-credit courses.

For each course that met the requirements of the study and was described in the official institutional publications, a ratio was computed on the relationship of scheduled contact hours to credit hours. To facilitate the comparison of the exhibited ratios in the various institutions, twenty-nine subject matter areas were established, and the courses and exhibited ratios for each course were assigned to one of the subject matter areas. Organizational and administrative structures were not involved in this classification procedure.

Two additional stratifications were made to aid in the comparisons of exhibited ratios of scheduled contact hours to credit hours. The twenty-nine subject matter areas were classified into four major groups, including (1) humanities, (2) sciences, (3) social sciences, and (4) technical and professional; and the eight institutions involved in the study were classified as (1) teacher training, (2) technical, and (3) multi-purpose. With this structure, it was possible to examine exhibited contact-credit hour relationships by subject matter classification, by group classification, and by type of institution, and to determine if there were any patterns in the method of offering various subject matter areas between different types of institutions.

A total of 10,799 courses were included in the study. From the published information that was available, it was revealed that sixty per cent of all courses offered by the eight institutions and included in the study were offered on

the basis of one scheduled contact hour for each credit hour. Thirty-eight per cent, or 4,151 courses, had scheduled contact hours in excess of the assigned credit hours, while two per cent of the courses, or 193 courses, allowed credit hours in excess of the scheduled contact hours.

The social sciences, represented by history economics, political science, and sociology, exhibited the lowest all-institutional mean, 1.03, of scheduled contact hours to credit hours. With few exceptions, as noted and explained, the social sciences exhibited a balanced relationship of contact-credit hour arrangements.

The humanities, represented in the study by subject matter areas of art, English, languages, music, philosophy and religion, and speech and drama, exhibited the second lowest ratio in the study, 1.26. The all-institutional means for philosophy and religion, languages, speech and drama, and English exhibited a standard lecture-credit arrangement based on one hour of scheduled contact for each hour of credit in lecture, recitation, or laboratory work.

Music and art, the two remaining humanities included in this study, exhibited wide variations in the relationship of scheduled contact hours to credit hours. The range for the exhibited ratios in music was from .89 to 2.09, while the range in the subject matter area of art was from 1.00 to 2.76. In general, the applied courses required additional scheduled contact hours for credit hours, but there was no pattern for this assignment. Similar courses were offered

with different ratios in different institutions, and there was no published information to explain these variations.

The sciences, with representation of subject matter areas in pure science, biological sciences, and physical sciences, ranked third in the study with an all-institutional mean ratio of 1.37. Mathematics, the only pure science represented in the study, exhibited an all-institutional mean ratio of 1.01. The physical and biological sciences were represented in high ratio subject matter areas, and no definite pattern for contact-credit hour arrangements existed.

The laboratory sciences, particularly biology and chemistry, exhibited ratios of scheduled contact hours to credit hours significantly in excess of 1.00. Chemistry, with an all-institutional mean of 1.72, did exhibit some rather uniform patterns between various institutions for courses in general chemistry, qualitative analysis, and quantitative analysis. In progressing from general chemistry to quantitative analysis, the number of required contact hours for each credit granted increased.

The technical and professional group, including twelve subject matter areas, exhibited the highest all-institutional mean ratio in the study, 1.45. This ratio lost some of its significance in that most of the subject matter areas in this grouping were not offered by every institution. By way of example, agriculture was offered by four institutions, but Michigan State University exhibited

the highest contact-credit hour ratio and was the only university or college to offer a comprehensive program in this subject matter area. Another similar situation could be found in nursing. Three schools offered programs in this field, but the University of Michigan had a significantly higher contact-credit hour ratio than the other two schools. This was caused by scheduled lectures at the University of Michigan, while the same courses had arranged hours in the other two institutions, and therefore were not included in the study.

In the technical and professional areas, there seemed to be a general pattern of increased scheduled contact hours in relation to credit hours as the subject matter offerings applied methods and activity techniques in a field of specialization. From the information available, it also appeared that there was no definite pattern for the assignment of scheduled contact hours related to the credit hours.

The exhibited ratios in the various subject matter areas and group classifications were analyzed by type of institution to determine if there might be some differences in the ratios of similar subject matters based on the nature and objectives of the different institutions. From the limited data available, it was apparent that variations did exist between similar subject matters offered in different types of institutions, but the variations were random in nature. There was no strong evidence to indicate that the type of institution was the reason for the variations in the

relationship of scheduled contact hours to credit hours.

The exploration of causes for ratio variations in subject matter areas included personal interviews with deans and/or heads of departments whose areas exhibited contact-credit hour ratios noticeably in excess of 1.00. Preliminary interviewing in one institution offered little, if any, valid information that might add to the findings of the study. Specific questioning drew generalized and somewhat defensive or antagonistic responses. Based on the results of the preliminary interviews and due to the nature of the information that was secured, further interviewing was terminated.

A study was made of the published information of various accrediting associations to determine the requirements established for accreditation in different areas of concentration. In most instances, the accrediting association for the respective fields were very specific in the requirements for faculty, terminal degrees, teaching load, library facilities, physical plant facilities, academic degrees to be granted, distribution of courses in various areas and budget. Investigation revealed only two areas, music and chemistry, in which the accrediting organizations published statements regarding the scheduled contact hours as related to credit hours. The ratios exhibited in the area of chemistry followed, in general, the stated requirements of the accrediting association for this field in three specific chemistry courses. The exhibited music ratios did not always appear to follow the accreditation requirements, but

there is the possibility that practice hours were specified, without being indicated in the course descriptions. Furthermore, it appeared that the music accreditation requirements allowed some degree of flexibility in course offerings at the institutional level.

Conclusions

Based on the published information available for this study, there were significant numbers of courses being offered in the eight state institutions involved in the study that exhibited a relationship in excess of one scheduled contact hour for each credit hour.

The research of existing policies and statements found in the official publications for the institutions in the study and various accrediting associations did not reveal conclusive evidence for the existence of the variations in subject matter contact-credit hour relationships.

From the evidence presented, there appeared to be a definite absence of stated policy governing the entire area of scheduled contact hours related to credit hours in the eight institutions of the study. Such findings would indicate that scheduled contact hours as related to credit hours are assigned or determined by the historical pattern of the different subject matter areas, or by individual edict at the institutional or departmental level with little attention devoted to official published statements of explanation for any specific course offerings.

Recommendations

The findings in this study would suggest that serious consideration be given to the establishment of standards and policies governing the requirements of scheduled contact hours as related to credit hours in various subject matter areas.

Any subject matter area that exhibited a relationship of more than one scheduled contact hour for each credit hour should have some basis for this contact-credit hour arrangement. It would also seem imperative that (1) a student should know what to expect in the contact-credit hour requirements for any course that becomes an integral part of his educational program, (2) the faculty should be utilized in the best interests of the educational objectives of individual institutions, and (3) the physical facilties of the institutions should be employed for maximum benefits to the students, the institution, and the tax payers who contribute heavily for the support of the colleges and universities in the state.

Under existing conditions, as revealed by this study, institutional official published statements would not represent to the student, in many cases, a fair explanation regarding the contact-credit hour arrangements for various courses. This is a grave injustice to the student, and it implies a lack of uniformity of policy regarding contact-credit hours within an institution, and, in some instances, within a department.

If the future demands on institutions of higher

education are to be met, every faculty member and all physical plants and facilities will of necessity need to be utilized at maximum efficiency. The variations exhibited in the scheduled contact-credit hour relationships in certain subject matter areas raise several questions.

What is the role of the laboratory period? The high contact-credit hour ratios found in most laboratory courses suggest that such experiences are requisites for complete academic understanding of those subject matters involving the use of laboratory work. Dr. Benson Ginsberg, head of the biological section, at the University of Chicago, writing in Current Issues in Higher Education, offers these comments on laboratory work:

> The problem of laboratory requirements has a practical as well as a pedagogical side. The practical side has to do with space, facilities, and man power to carry out an adequate program of laboratory instruction for all students during an era of peak enrollments. In order to offset these practical issues, surrogates for laboratory experience are constantly being proposed, provided, and improved. Among these are audio-visual aids, demonstrations, and use of local facilities such as museum or an arboretum, in communities where they exist.
>
> ....The important concepts in any scientific field can and have been taught without formal laboratory. There are also many laboratory courses taught that keep the student occupied with highly dubious and dispensable busy work. One can certainly find good and bad examples of general courses on either side of the laboratory fence, and, perhaps a variety of approaches to the general topic is the healthiest situation for curricular development and improvement.[29]

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[29]Ginsberg, Denson E. "To What Extent Should Laboratory Requirements Be a Part of Science Education for Non-science Majors?" Current Issues in Higher Education, 1961. Washington, D. C.: Association for Higher Education, 1961. pp. 70-72.

The present study was not organized to investigate better methods for offering particular subject matter material, but the findings would indicate that such experimentation should be done.

Another question which might be raised as the result of the findings in this study might be: Are there sound educational benefits derived by the students by exposure to required increased contact hours as related to credit hours in any subject matter area? Research into the justification for increased contact hours related to credit hours might offer some light on this subject.

Are students being given enough opportunity for self-development in current educational programs, or are they being over supervised? This question has already been given considerable attention in the form of individual or independent experimental studies being conducted in such schools as Goddard College, Bard College, Wesleyan University, and Monteith College of Wayne State University. It is the hope of the institutions offering these experimental programs that quality in the educational program might be increased, the student challenged and developed more fully than through conventional educational programs, and that far more efficient use of instructional staff and facilities might be made.

Could faculty members now being used to staff subject matter areas exhibiting ratios in excess of 1.00 be used more effectively in some other capacity? The increased

demand for well-qualified faculty members makes it imperative that such faculty members should not be used to staff additional class sessions that might be adequately covered by some different technique.

Are there any new, and possibly better, methods of presenting different subject matter material and still maintaining quality academic student development? Increased experimentation in the use of audio-visual aids, with special emphasis on educational television; testing involving large-small class sizes; the use of teaching machines; and the previously mentioned independent study programs are examples of investigations established to develop student achievement while increasing the utilization of faculty and facilities.

It is evident from the data presented in this study that the area of scheduled contact hours as related to credit hours in various subject matter areas needs immediate and constructive attention. A critical evaluation at departmental and institutional levels of those courses exhibiting ratios of scheduled contact hours in excess of credit hours should be made, and some specific official statement of policy should be published regarding the contact-credit hour relationships.

APPENDIX

Appendix A

NUMBER AND PERCENTAGE OF COURSES BY DEPARTMENTS EXHIBITING VARIOUS RATIOS OF SCHEDULED CONTACT HOURS TO CREDIT HOURS, CENTRAL MICHIGAN UNIVERSITY

Ratio	Agr		Art		Biol		Comm		Eng Lang Lit		For Lang	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	11	68.8	6	17.6	7	16.3	34	79.1	62	94.	30	100.
1.17												
1.20												
1.25	1	6.3					2	4.7				
1.33	2	13.5			1	2.3	1	2.3	2	3.		
1.38												
1.40												
1.50	1	6.2			7	16.3	2	4.7	1	1.5		
1.60												
1.67	1	6.2	26	76.5	17	39.5	1	2.3	1	1.5		
1.75							1	2.3				
1.80												
2.00			2	5.9	11	25.6	2	4.7				
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	16	100	34	100	43	100	43	100	66	100	30	100
Mean	1.13		1.56		1.61		1.12		1.03		1.00	

Appendix A-Continued

Ratio	Geog & Geol No.	Geog & Geol %	Heal P.E. No.	Heal P.E. %	Home Ec No.	Home Ec %	Ind Art No.	Ind Art %	Mil Sc No	Mil Sc %	Music No.	Music %
.20												
.40												
.50												
.60												
.67												
.75												
1.00	26	92.9	19	27.1	14	58.4	7	26.9			20	53.
1.17												
1.20												
1.25					2	8.3					2	5.
1.33			6	8.6			5	19.2				
1.38												
1.40					2	8.3					2	5.
1.50			7	10.							2	5.
1.60					1	4.2	3	11.5				
1.67			2	2.9			1	3.9	4	50.		
1.75												
1.80												
2.00	2	7.1	35	50.	3	12.5	10	38.5			12	32.
2.20												
2.25												
2.29												
2.33					2	8.3						
2.40												
2.50												
2.60												
2.67												
2.75												
3.00			1	1.4					4	50.		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	28	100	70	100	24	100	26	100	8	100	38	100
Mean	1.07*		1.63		1.32		1.54		2.34		1.38	

*Geog, 1.05; Geol, 1.17

Appendix A-Continued

Ratio	Math No.	Math %	Phy & Che No.	Phy & Che %	Psy & Ed No.	Psy & Ed %	Lib No.	Lib %	Soc Sc No	Soc Sc %	Spe & Dra No.	Spe & Dra %
.20												
.40												
.50												
.60												
.67												
.75												
1.00	31	94.	28	43.1	55	85.	12	80.	102	100.	50	96.2
1.17												
1.20												
1.25											1	1.9
1.33			3	4.6	3	4.6						
1.38												
1.40			2	3.1								
1.50			8	12.3	6	9.2	1	6.7				
1.60												
1.67	1	3.	7	10.8	1	1.5					1	1.9
1.75			5	7.7								
1.80			2	3.1			2	13.3				
2.00												
2.20												
2.25			1	1.5								
2.29												
2.33												
2.40												
2.50			2	3.1								
2.60												
2.67	1	3.										
2.75												
3.00			6	9.2								
3.33												
3.50												
3.67												
3.80												
4.00			1	1.5								
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	33	100	65	100	65	100	15	100	102	100	52	100
Mean	1.07		1.54*		1.07		1.17		1.00**		1.02	

*Chemistry, 1.69; Physics, 1.42

**History, Econ, Philosophy, Pol Science, Sociology

Appendix A-Continued

Ratio	Total No.	Total %	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	514	68.1										
1.17												
1.20												
1.25	8	1.1										
1.33	22	2.9										
1.38												
1.40	6	.8										
1.50	35	4.6										
1.60	4	.5										
1.67	63	8.3										
1.75	6	.8										
1.80	2	.3										
2.00	77	10.2										
2.20												
2.25	1	.1										
2.29												
2.33	2	.3										
2.40												
2.50	2	.3										
2.60												
2.67	1	.1										
2.75												
3.00	11	1.5										
3.33												
3.50												
3.67												
3.80												
4.00	1	.1										
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	755	100										
Mean	1.25											

Appendix B

NUMBER AND PERCENTAGE OF COURSES BY DEPARTMENTS EXHIBITING VARIOUS RATIOS OF SCHEDULED CONTACT HOURS TO CREDIT HOURS, EASTERN MICHIGAN UNIVERSITY

Ratio	Art		Bus Stud		Chem		Ed		Engl-Spee		For Lang	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	5	17.3	24	64.9	6	35.3	18	94.7	56	100	19	46.4
1.17												
1.20												
1.25			2	5.4								
1.33			3	8.1								
1.38												
1.40												
1.50	1	3.4			1	5.9	1	5.3				
1.60												
1.67			1	2.7	2	11.8						
1.75												
1.80											6	14.6
2.00	21	72.5	7	18.9	4	23.5					1	2.4
2.20												
2.25					3	17.6						
2.29												
2.33											3	7.3
2.40												
2.50	1	3.4									8	19.5
2.60												
2.67												
2.75					1	5.9						
3.00	1	3.4									4	9.8
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	29	100	37	100	17	100	19	100	56	100	41	100
Mean	1.86		1.25		1.67		1.03		1.00		1.73	

Appendix B-Continued

Ratio	Geography No.	Geography %	History & Soc Sc No.	History & Soc Sc %	Home Ec No.	Home Ec %	Ind Ed-Appld A No.	Ind Ed-Appld A %	Libr Sc No	Libr Sc %	Math No.	Math %
.20												
.40												
.50												
.60												
.67												
.75												
1.00	21	87.5	65	100	14	63.7	26	100	8	88.9	25	100
1.17												
1.20												
1.25												
1.33	1	4.2			1	4.5						
1.38												
1.40												
1.50					1	4.5						
1.60												
1.67									1	11.1		
1.75												
1.80												
2.00	2	8.3			6	27.3						
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	24	100	65	100	22	100	26	100	9	100	25	100
Mean	1.10		1.00*		1.31		1.00		1.07		1.00	

*Econ, History, Philosophy, Pol Science, Sociology

Appendix B-Continued

Ratio	Mil Sc No.	Mil Sc %	Music No.	Music %	Nat Sc No.	Nat Sc %	P.E.Heal No.	P.E.Heal %	Phys-Ast No	Phys-Ast %	Spec Ed No.	Spec Ed %
.20												
.40												
.50												
.60												
.67												
.75												
1.00	4	50.	21	65.6	10	40.	31	33.7	6	35.3	30	91.
1.17												
1.20									1	5.9		
1.25									3	17.6		
1.33							23	25.				
1.38												
1.40									3	17.6		
1.50	2	25.			3	12.	1	1.1	1	5.9	1	3.
1.60												
1.67									2	11.8	2	6.
1.75									1	5.9		
1.80												
2.00			4	12.5	12	48.						
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67							2	2.2				
2.75												
3.00	2	25.					27	29.3				
3.33												
3.50												
3.67												
3.80												
4.00			2	6.3								
5.00							7	7.6				
5.20												
5.75												
6.00			5	15.6			1	1.1				
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	8	100	32	100	25	100	92	100	17	100	33	100
Mean	1.63		2.09		1.54		2.07		1.28		1.06	

Appendix B-Continued

Ratio	Total No.	Total %	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	389	67.3										
1.17												
1.20	1	.2										
1.25	5	.9										
1.33	28	48.										
1.38												
1.40	3	.5										
1.50	12	2.1										
1.60												
1.67	8	1.4										
1.75	1	.2										
1.80	6	1.										
2.00	57	9.9										
2.20												
2.25	3	.5										
2.29												
2.33	3	.5										
2.40												
2.50	9	1.6										
2.60												
2.67	2	.3										
2.75	1	.2										
3.00	34	5.9										
3.33												
3.50												
3.67												
3.80												
4.00	2	.3										
5.00	7	1.2										
5.20												
5.75												
6.00	6	1.										
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	577	100										
Mean	1.42											

Appendix C

NUMBER AND PERCENTAGE OF COURSES BY DEPARTMENTS EXHIBITING VARIOUS RATIOS OF SCHEDULED CONTACT HOURS TO CREDIT HOURS, MICHIGAN COLLEGE OF MINING AND TECHNOLOGY

Ratio	Bus & Eng Adm		Chem Chem Eng		Civ Eng		Elec Eng		Eng Mech		Forest	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	57	100	26	37.2	16	50.	15	34.1	6	75.	8	20.5
1.17												
1.20												
1.25							10	22.7				
1.33												
1.38												
1.40												
1.50			10	14.3	10	31.3	7	15.9	1	12.5	1	2.6
1.60												
1.67			1	1.4	2	6.3					22	56.4
1.75			8	11.4	2	6.3					6	15.4
1.80			3	4.3								
2.00			8	11.4			10	22.7	1	12.5	2	5.1
2.20												
2.25												
2.29												
2.33			1	1.4								
2.40												
2.50			3	4.3								
2.60												
2.67			3	4.3								
2.75												
3.00			7	10.	2	6.3	1	2.3				
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	57	100	70	100	32	100	44	100	8	100	39	100
Mean	1.00*		1.67		1.37		1.42		1.19		1.56	

*Psychology

Appendix C-Continued

Ratio	Geology & Geog Eng No.	%	Human Social St No.	%	Math No.	%	Mech Eng No.	%	Metallug Eng No	%	Mineral Dress No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	1	2.8	95	72.5	35	97.2	18	39.1	14	41.1	3	27.3
1.17												
1.20												
1.25							3	6.5	3	8.8		
1.33											1	9.1
1.38												
1.40									2	5.9		
1.50	3	8.3	3	2.3	1	2.8	4	8.8	5	14.7		
1.60											1	9.1
1.67	9	25.0	2	1.5			3	6.5	1	3.0		
1.75									3	8.8	4	36.4
1.80									2	5.9	1	9.1
2.00	5	13.9	7	5.3			7	15.2	3	8.8	1	9.1
2.20												
2.25	5	13.9										
2.29												
2.33	6	16.7										
2.40												
2.50									1	3.0		
2.60												
2.67												
2.75												
3.00	5	13.9	24	18.4			5	10.9				
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25	1	2.8										
6.33												
6.67												
7.00												***
7.01-31.50	1	2.8*									1	9.1
Total	36	100	131	100	36	100	46	100	34	100	11	100
Mean	2.60		1.44**		1.01		1.52		1.38		2.08	

*16.67

**English, Language, Literature, 1.21; Foreign Language, 1.00; History and Political Science, 1.00; Library, 1.00

***7.50

Appendix C-Continued

Ratio	Mining Eng No.	%	Phy Ed No.	%	Physics No.	%	ROTC No.	%	Total No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	8	72.7			19	52.8			321	51.4		
1.17												
1.20												
1.25					2	5.6			18	2.9		
1.33	1	9.1							8	1.3		
1.38												
1.40									2	.3		
1.50					12	33.3			57	9.1		
1.60									1	.2		
1.67					1	2.8	12	50.0	53	8.5		
1.75									23	3.7		
1.80	1	9.1							7	1.1		
2.00	1	9.1	10	100	2	5.6			57	9.1		
2.20												
2.25									5	.8		
2.29												
2.33									7	1.1		
2.40												
2.50									4	.6		
2.60												
2.67									3	.5		
2.75												
3.00							12	50.0	56	9.0		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25									1	.2		
6.33												
6.67												
7.00												
7.01-31.50									2	.3		
Total	11	100	10	100	36	100	24	100	625	100		
Mean	1.19		2.00		1.25		2.34		1.51			

Appendix D

NUMBER AND PERCENTAGE OF COURSES BY COLLEGES AND DEPARTMENTS EXHIBITING VARIOUS RATIOS OF SCHEDULED CONTACT HOURS TO CREDIT HOURS, MICHIGAN STATE UNIVERSITY

COLLEGES

Ratio	Basic		Agr		Bus & PS		Comm Arts		Ed		Eng	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	6	50.0	78	27.2	242	84.3	60	50.8	87	49.1	73	45.6
1.17											1	.6
1.20			3	1.0							1	.6
1.25	3	25.0	17	5.9	1	.4	1	.8	3	1.7	1	.6
1.33			45	15.7	17	5.9	26	22.0	17	9.6	4	2.5
1.38												
1.40			4	1.4			1	.8	1	.6	3	1.9
1.50			27	9.4			3	2.5	5	2.8	18	11.3
1.60			4	1.4					1	.6	3	1.9
1.67	3	25.0	57	19.9	2	.7	19	16.1	8	4.5	22	13.8
1.75			3	1.0			1	.8			1	.6
1.80			3	1.0	2	.7					4	2.5
2.00			32	11.1	12	4.2	7	5.9	31	17.5	17	10.6
2.20									1	.6		
2.25			1	.4								
2.29					2	.7						
2.33			8	2.8					4	2.3	1	.6
2.40												
2.50					1	.4			3	1.7		
2.60												
2.67									1	.6	2	1.3
2.75												
3.00			3	1.0	2	.7			15	8.5	9	5.6
3.33												
3.50					3	1.0						
3.67					3	1.0						
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50			2	.8								
Total	12	100	287	100	287	100	118	100	177	100	160	100
Mean	1.23		1.63		1.15		1.26		1.50		1.45	

Appendix D-Continued

(COLLEGES-Continued)

Ratio	Home Ec No.	Home Ec %	Sc & Arts No.	Sc & Arts %	Milty Sc No.	Milty Sc %	Vet Med No.	Vet Med %	Total No	Total %	No.	%
.20												
.40												
.50												
.60												
.67												
.75			16	1.6					16	.7		
1.00	33	30.0	594	58.8			33	30.0	12 06	53.0		
1.17									1	.04		
1.20	1	.9	2	.2			2	1.8	9	.4		
1.25	6	5.5	19	1.9			6	5.5	57	2.5		
1.33	12	10.9	28	2.8			6	5.5	155	6.8		
1.38			6	.6					6	.3		
1.40	2	1.8	6	.6			4	3.7	21	.9		
1.50	14	12.7	42	4.2			5	4.5	114	5.0		
1.60	2	1.8	4	.4			2	1.8	16	.7		
1.67	8	7.4	39	3.9	4	50.0	2	1.8	164	7.2		
1.75	1	.9	34	3.4			9	8.2	49	2.2		
1.80	1	.9	8	.8			2	1.8	20	.9		
2.00	22	20.0	163	16.1			23	20.9	307	13.5		
2.20									1	.04		
2.25			1	.1					2	.09		
2.29							1	.9	3	.1		
2.33	5	4.5	19	1.9			5	4.6	42	2.6		
2.40							2	1.8	2	.09		
2.50	1	.9					3	2.7	8	.4		
2.60												
2.67									3	.1		
2.75			1	.1					1	.04		
3.00	2	1.8	27	2.7	4	50.0	2	1.8	64	3.0		
3.33												
3.50									3	.1		
3.67									3	.1		
3.80												
4.00												
5.00			1	.1					1	.04		
5.20												
5.75							3	2.7	3	.1		
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50									2	.09		
Total	110	100	1011	100	8	100	110	100	2279	100		
Mean	1.51		1.34		2.34		1.69		1.31			

Appendix D-Continued

Basic College

Ratio	Comm Skills No.	Comm Skills %	Nat Sc No.	Nat Sc %	Soc Sc No.	Soc Sc %	Human No.	Human %	Total No	Total %	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00					3	100	3	100	6	50.0		
1.17												
1.20												
1.25			3	100					3	25.0		
1.33												
1.38												
1.40												
1.50												
1.60												
1.67	3	100							3	25.0		
1.75												
1.80												
2.00												
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	3	100	3	100	3	100	3	100	12	100		
Mean	1.67		1.25		1.90		1.00		1.23			

Appendix D-Continued

(College of Agriculture)

Ratio	Ag Econ No.	Ag Econ %	Ag Eng No.	Ag Eng %	Agr No.	Agr %	Anim Hus No.	Anim Hus %	Dairy No	Dairy %	Farm Crops No.	Farm Crops %
.20												
.40												
.50												
.60												
.67												
.75												
1.00	12	60.0	1	2.8	5	71.4	3	15.8	2	10.5	2	25.0
1.17												
1.20	1	5.0										
1.25	1	5.0					1	5.3	3	15.8	2	25.0
1.33	3	15.0	13	13.0			2	10.5	4	21.1	3	37.5
1.38												
1.40			1	2.8					1	5.3		
1.50	1	5.0	4	11.1			3	15.8	6	31.6	1	12.5
1.60			1	2.8								
1.67	1	5.0	13	36.1					1	5.3		
1.75							1	5.3				
1.80												
2.00	1	5.0	2	5.6	2	28.6	4	21.1	2	10.5		
2.20												
2.25												
2.29												
2.33							3	15.8				
2.40												
2.50												
2.60												
2.67												
2.75												
3.00							2	10.5				
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50			1	2.8*								
Total	20	100	36	100	7	100	19	100	19	100	8	100
Mean	1.18		2.08		1.29		1.80		1.43		1.25	

*22.00

Appendix D-Continued

College of Agriculture-Continued

Ratio	Fisheries & Wild L No.	%	Food Tech No.	%	Forest Prod No.	%	Forestry No.	%	Hort No	%	Packaging No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	4	33.3	2	33.3	6	23.1	11	35.5	7	15.6	1	11.1
1.17												
1.20							1	3.2	1	2.2		
1.25									7	15.6		
1.33							1	3.2	15	33.3	1	11.1
1.38												
1.40	1	8.3							1	2.2		
1.50	1	8.3			2	7.8	2	6.5	3	6.7		
1.60							1	3.2				
1.67	5	41.8	2	33.3	10	38.5	14	45.2	3	6.7	3	33.3
1.75									1	2.2		
1.80												
2.00			2	33.3	4	15.4	1	3.2	7	15.6	3	33.3
2.20												
2.25												
2.29												
2.33					3	11.5					1	11.2
2.40												
2.50												
2.60												
2.67	1	8.3										
2.75												
3.00					1	3.8						
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	12	100	6	100	26	100	31	100	45	100	9	100
Mean	1.49		1.56		1.68		1.40		1.41		1.74	

Appendix D-Continued

College of Agriculture-Continued

Ratio	Poultry Husband No.	%	Resource Developmt No.	%	Soil Science No.	%	Total No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	3	25.0	14	54.0	5	38.5	78	27.2				
1.17												
1.20							3	1.0				
1.25	3	25.0					17	5.9				
1.33			1	3.8	2	15.5	45	15.7				
1.38												
1.40												
1.50	3	25.0	1	3.8			27	9.4				
1.60			2	7.8			4	1.4				
1.67	2	16.7	1	3.8	2	15.5	57	19.9				
1.75					2	15.5	3	1.0				
1.80			3	11.6			3	1.0				
2.00	1	8.3	1	3.8	2	15.5	32	11.1				
2.20			1	3.8			1	.4				
2.25												
2.29												
2.33			1	3.8			8	2.8				
2.40												
2.50												
2.60												
2.67												
2.75												
3.00							3	1.0				
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50			1	3.8*			2	.8				
Total	12	100	26	100	13	100	287	100				
Mean	1.38		2.51		1.35		1.63				.	

*22.00

Appendix D-Continued

College of Business and Public Service

Ratio	Acctng		Bus Ed & Sect		Econ		Gen Bus		Hotel, Res Inst Mgm		Police & Pub Saf	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	20	95.0	2	14.3	44	100	50	91.0	21	58.3	20	80.0
1.17												
1.20												
1.25									1	2.8		
1.33			5	35.7			4	7.3	6	16.7	1	4.0
1.38												
1.40												
1.50												
1.60												
1.67									2	5.6		
1.75												
1.80												
2.00			2	14.3					3	8.6	4	16.0
2.20												
2.25												
2.29									2	5.6		
2.33												
2.40												
2.50							1	1.8				
2.60												
2.67												
2.75												
3.00	1	5.0							1	2.8		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	21	100	14	100	44	100	55	100	36	100	25	100
Mean	1.10		1.26		1.00		1.05		1.23		1.17	

Appendix D-Continued

College of Business and Public Service-Continued

Ratio	Pol Sc No.	Pol Sc %	Social Work No.	Social Work %	Urban Plan Land Arch No.	Urban Plan Land Arch %	Total No.	Total %	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	62	91.2	14	100	10	66.7	243	84.3				
1.17												
1.20												
1.25							1	.4				
1.33							16	5.9				
1.38												
1.40												
1.50												
1.60												
1.67							2	.7				
1.75												
1.80					2	13.3	2	.7				
2.00					3	20.0	12	4.2				
2.20												
2.25												
2.29							2	.7				
2.33												
2.40												
2.50							1	.4				
2.60												
2.67												
2.75												
3.00							2	.7				
3.33												
3.50	3	4.4					3	1.0				
3.67	3	4.4					3	1.0				
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	68	100	14	100	15	100	287	100				
Mean	1.23		1.00		1.31		1.11					

Appendix D-Continued

College of Communication Arts

Ratio	Gen Comm Arts No.	%	Journal No.	%	Speech No.	%	Total No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	4	100	17	50.0	39	48.8	60	50.8				
1.17												
1.20												
1.25			1	2.9			1	.8				
1.33			2	6.0	24	30.0	26	22.0				
1.38												
1.40					1	1.3	1	.8				
1.50			3	8.8			3	2.5				
1.60												
1.67			7	20.6	12	15.0	19	16.1				
1.75			1	2.9			1	.8				
1.80												
2.00			3	8.8	4	5.0	7	5.9				
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	4	100	34	100	80	100	118	100				
Mean	1.00		1.32		1.25		1.26					

Appendix D-Continued

College of Education

Ratio	Adm Ed Serv No.	Adm Ed Serv %	Found of Ed No.	Found of Ed %	Health P.E. Rec No.	Health P.E. Rec %	Teacher Ed No.	Teacher Ed %	Total No	Total %	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	11	68.8	19	95.0	25	35.2	32	45.7	87	49.1		
1.17												
1.20												
1.25							3	4.3	3	1.7		
1.33	1	6.3			4	5.6	12	17.1	17	9.6		
1.38												
1.40							1	1.4	1	.6		
1.50	1	6.3	1	5.0	3	4.2			5	2.8		
1.60							1	1.4	1	.6		
1.67	3	18.8			5	7.0			8	4.5		
1.75												
1.80												
2.00					14	20.0	17	24.4	31	17.5		
2.20					1	1.4			1	.6		
2.25												
2.29												
2.33					4	5.6			4	2.3		
2.40												
2.50					2	2.8	1	1.4	3	1.7		
2.60												
2.67					1	1.4			1	.6		
2.75												
3.00					12	17.0	3	4.3	15	8.5		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	16	100	20	100	71	100	70	100	177	100		
Mean	1.18		1.03		1.78		1.43		1.50			

Appendix D-Continued

College of Engineering

Ratio	Applied Mechanics No.	%	Chem Eng No.	%	Civil & San Eng No.	%	Elect Eng No.	%	Mech Eng No	%	Metallurg Eng No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	8	66.8	12	60.0	10	35.7	23	67.6	13	26.6	7	41.1
1.17	1	8.3										
1.20	1	8.3										
1.25									1	2.0		
1.33									3	6.1	1	5.9
1.38												
1.40					1	3.6	1	2.9			1	5.9
1.50			1	5.0	8	28.6	1	2.9	6	12.2	2	11.8
1.60											3	17.6
1.67	1	8.3	2	10.0	7	25.0	2	6.0	8	16.4	2	11.8
1.75									1	2.0		
1.80			2	10.0	1	3.6			1	2.0		
2.00			2	10.0	1	3.6			13	26.6	1	5.9
2.20												
2.25												
2.29												
2.33									1	2.0		
2.40												
2.50												
2.60									2	4.1		
2.67												
2.75												
3.00	1	8.3	1	5.0			7	20.6				
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	12	100	20	100	28	100	34	100	49	100	17	100
Mean	1.25		1.37		1.07		1.48		1.59		1.35	

Appendix D-Continued

College of Engineering-Continued

Ratio	Total No.	Total %	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	73	45.6										
1.17	1	.6										
1.20	1	.6										
1.25	1	.6										
1.33	4	2.5										
1.38												
1.40	3	1.9										
1.50	18	11.3										
1.60	3	1.9										
1.67	22	13.8										
1.75	1	.6										
1.80	4	2.5										
2.00	17	10.6										
2.20												
2.25												
2.29												
2.33	1	.6										
2.40												
2.50												
2.60	2	1.3										
2.67												
2.75												
3.00	9	5.6										
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	160	100										
Mean	1.45											

Appendix D-Continued

College of Home Economics

Ratio	Food & Nutrit No.	%	Home Econ No.	%	Institut Adm No.	%	Tex Cloth Related No.	%	Total No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	7	25.0	11	36.8	2	20.0	13	28.3	33	30.0		
1.17												
1.20							1	2.2	1	.9		
1.25	3	10.8	1	3.3			2	4.4	6	5.5		
1.33	3	10.8	4	13.3			5	10.9	12	10.9		
1.38												
1.40			1	3.3			1	2.2	2	1.8		
1.50	2	7.2	7	23.3			5	10.9	14	12.7		
1.60	2	7.2							2	1.8		
1.67			2	6.7	3	30.0	3	6.5	8	7.4		
1.75	1	3.6					4	8.7	1	.9		
1.80	1	3.6							1	.9		
2.00	8	28.6	2	6.7			12	26.1	22	20.0		
2.20												
2.25												
2.29												
2.33			1	3.3	4	40.0			5	4.5		
2.40												
2.50	1	3.6							1	.9		
2.60												
2.67												
2.75												
3.00			1	3.3	1	10.0			2	1.8		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	28	100	30	100	10	100	46	100	110	100		
Mean	1.51		1.40		1.93		1.48		1.51			

Appendix D-Continued

College of Science and Arts

Ratio	Art		Botany and Plant Path		Chemistry		English		Entomology		Arabic	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	14	20.0	3	6.5	15	23.1	65	100	11	57.9	3	100
1.17												
1.20												
1.25			1	2.2					1	5.3		
1.33	1	1.4	1	2.2					3	15.8		
1.38												
1.40												
1.50					2	3.1						
1.60												
1.67			1	2.2	7	10.8						
1.75			4	8.7	10	15.4			1	5.3		
1.80					5	7.7						
2.00	42	60.0	31	67.4	13	20.0			1	5.3		
2.20												
2.25			1	2.2								
2.29												
2.33			4	8.7	5	7.7			1	5.3		
2.40												
2.50												
2.60												
2.67												
2.75					1	1.5						
3.00	13	18.6			7	10.8			1	5.3		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	70	100	46	100	65	100	65	100	19	100	3	100
Mean	1.98		1.91		1.81		1.00		1.33		1.00	

Appendix D-Continued

College of Science and Arts-Continued

Ratio	Chinese		French		German		Italian		Jap		Latin	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	3	100	20	69.7	21	71.8	9	100	9	100	9	100
1.17												
1.20												
1.25												
1.33			3	10.3								
1.38												
1.40												
1.50												
1.60												
1.67			3	10.3	3	11.1						
1.75												
1.80			3	10.3								
2.00					3	11.1						
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	3	100	29	100	27	100	9	100	9	100	9	100
Mean	1.00		1.19		1.19		1.00		1.00		1.00	

Appendix D-Continued

College of Science and Arts-Continued

Ratio	Greek		Portg		Russian		Spanish		Foreign Studies		Geography	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	6	100	3	100	5	100	24	68.6	30	100	28	84.8
1.17												
1.20												
1.25												
1.33							5	14.3				
1.38												
1.40												
1.50												
1.60												
1.67							3	8.6				
1.75												
1.80												
2.00							3	8.6			3	9.1
2.20												
2.25												
2.29												
2.33											2	6.1
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	6	100	3	100	5	100	35	100	30	100	33	100
Mean	1.00		1.00		1.00		1.19		1.00		1.17	

Appendix D-Continued

College of Science and Arts-Continued

Ratio	Geology		History		Math		Microbio Public H		Music		Nursing	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	6	18.3	74	100	51	100	8	21.6	34	25.2	1	7.7
1.17												
1.20												
1.25	1	3.0					1	2.7	8	8.2	3	23.1
1.33									2	2.1	1	7.7
1.38									6	6.2		
1.40											1	7.7
1.50							2	5.4	20	20.6	3	23.1
1.60							3	8.1				
1.67	9	27.3							4	4.1		
1.75	1	3.0					3	8.1				
1.80												
2.00	15	45.4					16	43.3	20	20.6	4	30.8
2.20												
2.25												
2.29												
2.33	1	3.0					3	8.1				
2.40												
2.50									1	1.0		
2.60												
2.67												
2.75												
3.00							1	2.7	1	1.0		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00									1	1.0		
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	33	100	74	100	51	100	37	100	97	100	13	100
Mean	1.71		1.00		1.00		1.75		1.47		1.54	

Appendix D-Continued

College of Science and Arts-Continued

Ratio	Philosophy		Physics Astronomy		Physiology Pharm		Psychol		Religion		Soc & Anthrop	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75	16	39.0										
1.00	25	61.0	15	39.6	4	15.4	22	71.0	24	100	35	97.2
1.17												
1.20					1	3.8	1	3.2				
1.25					2	7.7	1	3.2			1	2.8
1.33			4	10.5	4	15.4	3	9.7				
1.38												
1.40			1	2.6	3	11.5	1	3.2				
1.50			6	15.8	2	7.7	2	6.5				
1.60			1	2.6								
1.67			6	15.8	2	7.7						
1.75			3	7.9	6	23.2						
1.80												
2.00							1	3.2				
2.20												
2.25												
2.29												
2.33			1	2.6	1	3.8						
2.40												
2.50												
2.60												
2.67												
2.75												
3.00			1	2.6	1	3.8						
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	41	100	38	100	26	100	31	100	24	100	36	100
Mean	.90		1.39		1.52		1.12		1.00		1.01	

Appendix D-Continued

College of Science and Arts-Continued

Ratio	Stat		Zoology		Total							
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75					16	1.6						
1.00	9	90.0	8	24.2	594	58.8						
1.17												
1.20					2	.2						
1.25					19	1.9						
1.33	1	10.0			28	2.8						
1.38					6	.6						
1.40					6	.6						
1.50			5	15.2	42	4.2						
1.60					4	.4						
1.67			1	3.0	39	3.9						
1.75			6	18.2	34	3.4						
1.80					8	.8						
2.00			10	30.3	162	16.1						
2.20												
2.25					1	.1						
2.29												
2.33			1	3.0	19	1.9						
2.40												
2.50												
2.60												
2.67												
2.75					1	.1						
3.00			2	6.1	27	2.7						
3.33												
3.50												
3.67												
3.80												
4.00												
5.00					1	.1						
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	10	100	33	100	1010	100						
Mean	1.03		1.70		1.34							

Appendix D-Continued

College of Veterinary Medicine

Ratio	Anatomy		Microbiol Pub Heal		Physiolgy Pharmac-gy		Surgery Medicine		Vet Path		Total	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	1	6.8	9	22.5	4	15.4	12	75.0	7	53.8	33	30.0
1.17												
1.20					1	3.8			1	7.7	2	1.8
1.25	2	13.3	1	2.5	3	11.5					6	5.5
1.33	2	13.3			4	15.5					6	5.5
1.38												
1.40					3	11.5	1	6.3			4	3.7
1.50	2	13.3	2	5.0	1	3.8					5	4.5
1.60			1	2.5					1	7.7	2	1.8
1.67					2	7.7					2	1.8
1.75			3	7.5	6	23.2					9	8.2
1.80			2	5.0							2	1.8
2.00	2	13.3	18	45.0					3	23.1	23	20.9
2.20												
2.25												
2.29	1	6.8									1	.9
2.33			3	7.5	1	3.8			1	7.7	5	4.6
2.40	2	13.3									2	1.8
2.50	3	20.0									3	2.7
2.60												
2.67												
2.75												
3.00			1	2.5	1	3.8					2	1.8
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75							3	18.8			3	2.7
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	15	100	40	100	26	100	16	100	13	100	110	100
Mean	1.85		1.74		1.51		1.92		1.39		1.69	

Appendix E

NUMBER AND PERCENTAGE OF COURSES BY DEPARTMENTS EXHIBITING VARIOUS RATIOS OF SCHEDULED CONTACT HOURS TO CREDIT HOURS, NORTHERN MICHIGAN COLLEGE

Ratio	Art		Biol Sc		Business		Cons Agr		Geo & Earth Sc		H. P.E. Rec	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67							1	4.5				
.75												
1.00	24	100	11	33.3	39	63.9	5	22.7	17	73.9	12	21.1
1.17												
1.20												
1.25					2	3.3						
1.33			5	15.2	1	1.6	12	54.6	1	4.4		
1.38												
1.40			2	6.1								
1.50			7	21.2	1	1.6	1	4.5	1	4.4	15	26.3
1.60												
1.67			8	24.2	7	11.5	3	13.7	4	17.3		
1.75												
1.80												
2.00					8	13.2					24	42.1
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00					3	4.9					6	10.5
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	24	100	33	100	61	100	22	100	23	100	57	100
Mean	1.00		1.34		1.33		1.27*		1.15**		1.76	

*Conservation, 1.27; Agriculture, 1.32

**Geography, 1.02, Geology, 1.30

Appendix E-Continued

Ratio	History Social Sc		Home Ec		Ind Art Ed		Lang Lit		Math		Music	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50											54	36.2
.60												
.67												
.75											50	33.6
1.00	66	90.4	17	47.2	8	29.7	55	98.2	30	100	18	12.1
1.17												
1.20												
1.25												
1.33	2	2.7									2	1.3
1.38												
1.40												
1.50	1	1.4	10	27.8	10	37.0					4	2.7
1.60												
1.67			3	8.3	9	33.3						
1.75			1	2.8								
1.80												
2.00			5	13.9							21	14.1
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00	4	5.5					1	1.8				
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	73*	100	36	100	27	100	56	100	30	100	149	100
Mean	1.18		1.35		1.41		1.05		1.00		.89	

*Economics, 1.02; History, 1.00, Political Science, 1.00; Sociology, 1.57

Appendix E-Continued

Ratio	Physical Science No.	Physical Science %	Psych & Ed No.	Psych & Ed %	Library Science No.	Library Science %	Speech No.	Speech %	Total No	Total %	No.	%
.20												
.40												
.50									54	7.5		
.60												
.67									1	.1		
.75									50	6.9		
1.00	15	44.1	44	64.7	8	100	21	91.4	390	53.9		
1.17												
1.20												
1.25	2	5.9							4	.6		
1.33	4	11.8	4	5.9					31	4.3		
1.38												
1.40	3	8.8							5	.6		
1.50	8	23.5	8	11.8			1	4.3	67	9.3		
1.60												
1.67	2	5.9							36	5.0		
1.75			6	8.8					7	1.0		
1.80												
2.00			6	8.8			1	4.3	65	9.0		
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33									9	1.2		
3.50												
3.67												
3.80												
4.00												
5.00									5	.6		
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	35	100	68	100	8	100	23	100	724	100		
Mean	1.25*		1.23**		1.00		1.07		1.19			

*Chemistry, 1.33; Physics, 1.20

**Education, 1.11; Psychology, 1.02

Appendix F

NUMBER AND PERCENTAGE OF COURSES BY SCHOOLS, COLLEGES, AND DEPARTMENTS EXHIBITING VARIOUS RATIOS OF SCHEDULED CONTACT HOURS TO CREDIT HOURS, UNIVERSITY OF MICHIGAN

Ratio	Sc Archt Design		School Business		School Education		College Eng		Coll Lit Sc & Arts		School Music	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50											8	5.2
.60												
.67	1	1.7			2	1.1			37	2.5	5	3.2
.75												
1.00	31	21.4	67	62.7	151	81.7	270	65.9	1229	81.9	81	52.2
1.17												
1.20												
1.25					1	.5	3	.8	8	.5		
1.33			29	27.1	4	2.2	23	5.6	32	2.1	13	8.4
1.38												
1.40												
1.50	2	1.4	5	4.7	4	2.2	10	2.4	29	1.9	14	9.0
1.60							1	.2				
1.67							22	5.4	25	1.7	4	2.6
1.75			1	.9			12	2.9	10	.7		
1.80									4	.3		
2.00	6	4.1	3	2.8	6	3.2	39	9.5	73	4.9	9	5.8
2.20									26	1.7	3	1.9
2.25									1	.1		
2.29									2	.1		
2.33	2	1.4					1	.2	6	.4		
2.40												
2.50	3	2.1			2	1.1	2	.5	1	.1	13	8.4
2.60												
2.67	13	9.0					14	3.4				
2.75									6	.4		
3.00	85	58.6	1	.9			13	3.2	6	.4	1	.7
3.33					4	2.2					1	.7
3.50	1	.7			1	.5						
3.67												
3.80					1	.5						
4.00	1	.7	1	.9	6	3.2			4	.3		
5.00					1	.5			3	.2	3	1.9
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00					2	1.1						
7.01-31.50												
Total	145	100	107	100	185	100	410	100	1502	100	155	100
Mean	2.46		1.19		1.33		1.32		1.07		1.37	

Appendix F-Continued

Ratio	School Nat Resour No.	%	School Nurs No.	%	College Pharmacy No.	%	No.	%	No	%	Total No.	%
.20												
.40												
.50											8	.2
.60												
.67											45	1.3
.75												
1.00	31	40.8	3	21.4	11	50.4					1874	55.8
1.17												
1.20												
1.25											12	.3
1.33	1	1.3	1	7.1							103	3.0
1.38												
1.40					1	4.6					1	.1
1.50											166	4.9
1.60											1	.1
1.67					7	31.8					224	6.7
1.75	6	7.9	1	7.1	1	4.6					255	7.6
1.80			2	14.4							6	.2
2.00	31	40.8	1	7.1	1	4.6					424	12.6
2.20											29	.9
2.25											1	.1
2.29											2	.1
2.33											9	.3
2.40												
2.50	1	1.3									22	.7
2.60												
2.67											27	.8
2.75											6	.2
3.00	2	2.6			1	4.6					109	3.2
3.33											5	.1
3.50			1	7.1							3	.1
3.67												
3.80											1	.1
4.00	4	5.3									16	.8
5.00											7	.2
5.20			3	21.4							3	.1
5.75												
6.00												
6.25												
6.33			2	14.4							2	.1
6.67												
7.00											2	.1
7.01-31.50												
Total	76	100	14	100	22	100					3363	100
Mean	1.70		3.10		1.40						1.40	

Appendix F-Continued

College of Architecture and Design

Ratio	Arch		Art		Art Ed		City Pl & Des		Drawing		Land Arch	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67							1	2.7				
.75												
1.00	17	39.5	1	12.5	1	20.0	3	8.1			9	45.0
1.17												
1.20												
1.25												
1.33												
1.38												
1.40												
1.50							2	5.4				
1.60												
1.67												
1.75												
1.80												
2.00					4	80.0					2	10.0
2.20												
2.25												
2.29												
2.33											2	10.0
2.40												
2.50											3	15.0
2.60												
2.67	12	28.0									1	5.0
2.75												
3.00	13	30.2	7	87.5			31	83.8	32	100	2	10.0
3.33												
3.50											1	5.0
3.67												
3.80												
4.00	1	2.3										
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	43	100	8	100	5	100	37	100	32	100	20	100
Mean	2.4		2.75		1.80		2.69		3.00		1.87	

Appendix F-Continued

College of Architecture and Design-Continued

Ratio	Total No.	Total %	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67	1	.7										
.75												
1.00	31	21.4										
1.17												
1.20												
1.25												
1.33												
1.38												
1.40												
1.50	2	1.4										
1.60												
1.67												
1.75												
1.80												
2.00	6	4.1										
2.20												
2.25												
2.29												
2.33	2	1.4										
2.40												
2.50	3	2.1										
2.60												
2.67	13	9.0										
2.75												
3.00	85	58.6										
3.33												
3.50	1	.7										
3.67												
3.80												
4.00	1	.7										
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	145	100										
Mean	2.46											

Appendix F-Continued

School of Business Administration

Ratio	General		Acctng		Finance		Hosp Adm		Ind Rel		Insurance	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	17	81.0	12	60.0	11	73.3	1	20.0	2	33.3	7	100
1.17												
1.20												
1.25												
1.33	3	14.3	6	30.0	2	13.3	1	20.0	3	50.0		
1.38												
1.40												
1.50	1	4.7	2	10.0	1	6.7						
1.60												
1.67												
1.75									1	16.7		
1.80												
2.00					1	6.7	1	20.0				
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00							1	20.0				
3.33												
3.50												
3.67												
3.80												
4.00							1	20.0				
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	21	100	20	100	15	100	5	100	6	100	7	100
Mean	1.07		1.15		1.14		2.27		1.29		1.00	

Appendix F-Continued

School of Business Administration-Continued

Ratio	Mangmt		Mkting		Real Est		Sect		Stat		Total	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	4	66.7	6	42.9	2	66.7	1	50.0	4	50.0	67	62.7
1.17												
1.20												
1.25												
1.33	1	16.7	8	57.1	1	33.3			4	50.0	29	27.1
1.38												
1.40												
1.50	1	16.7									5	4.7
1.60												
1.67												
1.75												
1.80											1	.9
2.00							1	50.0			3	2.8
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33											1	.9
3.50												
3.67												
3.80												
4.00												
5.00											1	.9
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	6	100	14	100	3	100	2	100	8	100	107	100
Mean	1.14		1.19		1.44		2.00		1.17		1.19	

Appendix F-Continued

School of Education

Ratio	History Phil		Adm		Ed Psych		Methods		Voc Ed		P. E.	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67							2	5.4				
.75												
1.00	16	94.1	20	95.2	29	93.5	27	73.0	11	100	29	60.4
1.17												
1.20												
1.25							1	2.7				
1.33					2	6.5	1	2.7			1	2.1
1.38												
1.40												
1.50			1	4.8			2	5.4			1	2.1
1.60												
1.67												
1.75												
1.80												
2.00	1	6.9					3	8.1			2	4.2
2.20												
2.25												
2.29												
2.33												
2.40												
2.50											2	4.2
2.60												
2.67												
2.75												
3.00												
3.33											4	8.4
3.50											1	2.1
3.67												
3.80							1	2.7				
4.00											6	12.5
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00											2	4.2
7.01-31.50												
Total	17	100	21	100	31	100	37	100	11	100	48	100
Mean	1.06		1.02		1.02		1.18		1.00		1.99	

Appendix F-Continued

School of Education-Continued

Ratio	Higher No.	Higher %	Adult Ed No.	Adult Ed %	Counsel Guid No.	Counsel Guid %	No.	%	No	%	Total No.	Total %
.20												
.40												
.50												
.60												
.67											2	1.1
.75												
1.00	7	100	4	100	8	88.9					151	81.7
1.17												
1.20												
1.25											1	.5
1.33											4	2.2
1.38												
1.40												
1.50											4	2.2
1.60												
1.67												
1.75												
1.80												
2.00											6	3.2
2.20												
2.25												
2.29												
2.33												
2.40												
2.50											2	1.1
2.60												
2.67												
2.75												
3.00												
3.33											4	2.2
3.50											1	.5
3.67												
3.80											1	.5
4.00											6	3.2
5.00					1	11.1					1	.5
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00											2	1.1
7.01-31.50												
Total	7	100	4	100	9	100					185	100
Mean	1.00		1.00		1.44						1.33	

Appendix F-Continued

College of Engineering

Ratio	Aeronaut Astronaut No.	%	Chemical Metallurg No.	%	Civil Eng No.	%	Drawing No.	%	Electric Eng No	%	Eng Mechan No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	29	82.9	31	52.5	34	50.7			31	55.4	26	92.8
1.17												
1.20												
1.25	3	8.6										
1.33			9	15.3	3	4.5						
1.38												
1.40												
1.50			5	8.5					4	7.1		
1.60												
1.67	1	2.9	4	6.8	8	11.9			2	3.6		
1.75									12	21.4		
1.80												
2.00	2	5.7	8	13.6	8	11.9	6	85.7	6	10.7	2	7.2
2.20												
2.25												
2.29												
2.33			1	1.7								
2.40												
2.50									1	1.8		
2.60												
2.67					9	13.4						
2.75												
3.00			1	1.7	5	7.6			1	14.3		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	35	100	59	100	67	100	6	100	56	100	28	100
Mean	1.10		1.33		1.59		2.00		1.35		1.11	

Appendix F-Continued

College of Engineering-Continued

Ratio	English		Indust Eng		Institut Eng		Mechanic Eng		Meterol-ogy		Naval Arch Marine Eng	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	24	96.0	16	80.0	9	64.4	35	64.8	12	75.0	8	80.0
1.17												
1.20												
1.25												
1.33			2	10.0	1	7.1	7	13.0			1	10.0
1.38												
1.40												
1.50			1	5.0								
1.60											1	10.0
1.67							3	5.6	2	12.5		
1.75												
1.80												
2.00	1	4.0			1	7.1	4	7.4	1	6.3		
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67			1	5.0			4	7.4				
2.75												
3.00					3	21.4	1	1.9	1	6.3		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	25	100	20	100	14	100	54	100	16	100	10	100
Mean	1.04		1.14		1.52		1.31		1.27		1.09	

Appendix F-Continued

College of Engineering-Continued

Ratio	Nuclear Eng No.	%	Science Eng No.	%	Total No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	13	76.5	2	100	270	65.9						
1.17												
1.20												
1.25					3	.8						
1.33					23	5.6						
1.38												
1.40					10	2.4						
1.50					1	.2						
1.60												
1.67	2	11.8			22	5.4						
1.75					12	2.9						
1.80												
2.00	1	5.9			39	9.5						
2.20												
2.25												
2.29												
2.33					1	.2						
2.40												
2.50	1	5.9			2	.5						
2.60												
2.67					14	3.4						
2.75												
3.00					13	3.2						
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	17	100	2	100	410	100						
Mean	1.23		1.00		1.32							

Appendix F-Continued

College of Literature, Science, and the Arts

Ratio	Air Science		American Studies		Anatomy		Anthrop		Asian Studies		Astron-omy	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67							2	4.2				
.75												
1.00			4	100			46	95.8			17	85.0
1.17												
1.20												
1.25									2	100		
1.33												
1.38												
1.40					1	11.1						
1.50	2	40.0										
1.60												
1.67	2	40.0										
1.75					1	11.1						
1.80					1	11.1						
2.00					3	33.4					2	10.0
2.20												
2.25					1	11.1						
2.29					2	22.2						
2.33												
2.40												
2.50												
2.60												
2.67												
2.75											1	5.0
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00	1	20.0										
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	5	100	4	100	9	100	48	100	2	100	20	100
Mean	1.07		1.00		1.98		.99		1.00		1.20	

Appendix F-Continued

College of Literature, Science, and the Arts-Continued

Ratio	Bacteriolgy No.	%	Biological Chemistry No.	%	Botany No.	%	Chemistry No.	%	Class Studies No	%	Eng. Lan. Lit. No.	%
.20												
.40												
.50												
.60												
.67											12	14.1
.75												
1.00	5	41.7	6	46.2	12	36.4	17	35.4	58	98.4	71	83.5
1.17												
1.20												
1.25												
1.33			1	7.7			2	4.2			2	2.4
1.38												
1.40	1	8.3										
1.50					2	6.1	3	6.3				
1.60			1	7.7								
1.67												
1.75			1	7.7			2	4.2				
1.80							2	4.2				
2.00	5	41.7	3	23.1			12	25.0				
2.20					19	57.6	3	6.3				
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75							6	12.5				
3.00			1	7.7								
3.33												
3.50												
3.67												
3.80												
4.00	1	8.3					1	2.1				
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	12	100	13	100	33	100	48	100	58	100	85	100
Mean	1.70		1.51		1.72		1.70		1.00		.96	

Appendix F-Continued

College of Literature, Science, and the Arts-Continued

Ratio	Far East Lan & Lit No.	%	Fine Arts No.	%	Geography No.	%	Geology No.	%	German Lan &Lit No	%	Great Books No.	%
.20												
.40												
.50												
.60												
.67					1	2.6						
.75												
1.00	21	100	18	100	38	97.4	19	61.3	33	100	3	100
1.17												
1.20												
1.25							2	6.5				
1.33												
1.38												
1.40												
1.50							1	3.2				
1.60												
1.67							1	3.2				
1.75							3	9.7				
1.80												
2.00												
2.20							3	9.7				
2.25												
2.29												
2.33							2	6.5				
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	21	100	18	100	39	100	31	100	33	100	3	100
Mean	1.00		1.00		.99		1.33		1.00		1.00	

Appendix F-Continued

College of Literature, Science, and the Arts-Continued

Ratio	History		Human Genetics		Journal-ism		Library Science		Ling Progress		Math	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67	7	8.5					1	3.7	5	12.8		
.75												
1.00	75	91.5	4	100	13	46.4	26	96.3	31	79.5	115	97.5
1.17												
1.20												
1.25												
1.33					3	10.7			3	7.7	2	1.7
1.38												
1.40												
1.50					10	35.7					1	.8
1.60												
1.67												
1.75												
1.80												
2.00					2	7.7						
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	82	100	4	100	28	100	27	100	39	100	118	100
Mean	.97		1.00		1.29		.99		.98		1.01	

Appendix F-Continued

College of Literature, Science, and the Arts-Continued

Ratio	Military Science No.	%	Minerology No.	%	Naval Science No.	%	Near E Studies No.	%	Pathology No	%	Philosophy No.	%
.20												
.40												
.50												
.60												
.67							3	9.7			3	7.7
.75												
1.00			2	14.3			24	77.4	6	66.7	36	92.3
1.17												
1.20												
1.25									1	11.1		
1.33			4	28.6								
1.38												
1.40												
1.50			1	7.1								
1.60												
1.67	1	12.5	2	14.3	15	100						
1.75							2	6.5				
1.80												
2.00	4	50.0	4	28.6			2	6.5				
2.20												
2.25												
2.29												
2.33	3	37.5	1	7.1								
2.40												
2.50									1	11.1		
2.60												
2.67												
2.75												
3.00									1	11.1		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	8	100	14	100	15	100	31	100	9	100	39	100
Mean	2.08		1.61		1.00		1.08		1.42		.97	

Appendix F-Continued

College of Literature, Science, and the Arts-Continued

Ratio	Physics No.	Physics %	Physiology No.	Physiology %	Political Science No.	Political Science %	Public Health No.	Public Health %	Psychology No	Psychology %	Romance Lan&Lit No.	Romance Lan&Lit %
.20												
.40												
.50												
.60												
.67					18	29.0			1	2.4		
.75												
1.00	42	85.7	4	50.0	44	71.0	2	100	27	65.9	64	98.5
1.17												
1.20												
1.25												
1.33											1	1.5
1.38									10	24.4		
1.40												
1.50	2	4.1	1	12.5								
1.60												
1.67									1	2.4		
1.75	1	2.0										
1.80												
2.00	4	8.2	3	37.5					2	4.9		
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	49	100	8	100	62	100	2	100	41	100	65	100
Mean	1.12		1.44		.90		1.00		1.14		1.00	

Appendix F-Continued

College of Literature, Science, and the Arts-Continued

Ratio	Slavic Language		Sociology		Speech		Zoology		Economics		Total	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67					1	1.3					54	3.6
.75												
1.00	30	100	34	94.4	62	82.7	12	25.5	58	95.1	1212	80.7
1.17												
1.20												
1.25			2	5.6							8	.5
1.33									2	3.3	32	2.1
1.38					2	2.7	1	2.1				
1.40												
1.50					4	5.3	3	6.4			29	1.9
1.60												
1.67							3	6.4			25	1.7
1.75											10	.7
1.80							1	2.1			4	.3
2.00					3	4.0	23	48.9			73	4.9
2.20					1	1.3					26	1.7
2.25											1	.1
2.29											2	.1
2.33											6	.4
2.40												
2.50											1	.1
2.60												
2.67												
2.75											6	.4
3.00							2	4.3	1	1.6	6	.4
3.33												
3.50												
3.67												
3.80												
4.00							2	4.3			4	.3
5.00					2	2.7					3	.2
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	30	100	36	100	75	100	47	100	61	100	1502	100
Mean	1.00		1.01		1.19		1.80		1.04		1.07	

Appendix F-Continued

School of Music

Ratio	Applied		Comp		Conduct		Dept Lit		Ensemble		Languages	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	6	26.1	5	83.3	2	50.0	11	100	1	10.0		
1.17												
1.20												
1.25												
1.33			1	16.7							2	100
1.38												
1.40												
1.50	2	8.7			2	50.0						
1.60												
1.67												
1.75												
1.80												
2.00	2	8.7										
2.20									3	30.0		
2.25												
2.29												
2.33												
2.40												
2.50	13	56.5										
2.60												
2.67												
2.75												
3.00									1	10.0		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00									3	30.0		
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00									2	20.0		
7.01-31.50												
Total	23	100	6	100	4	100	11	100	10	100	2	100
Mean	1.98		1.06		1.25		1.00		3.90		1.00	

Appendix F-Continued

School of Music-Continued

Ratio	Music Education No.	%	Music Lit No.	%	Musicology Opera No.	%	Theory No.	%	No	%	Total No.	%
.20												
.40												
.50	8	19.0									8	5.2
.60												
.67	2	4.8	1	4.5	2	16.7					5	3.2
.75												
1.00	22	52.4	15	68.2	5	41.7	14	56.0			81	52.2
1.17												
1.20												
1.25												
1.33	3	7.1			2	16.7	5	20.0			13	8.4
1.38												
1.40												
1.50	4	9.5	2	9.1			4	16.0			14	9.0
1.60												
1.67	1	2.4	2	9.1	1	8.3					4	2.6
1.75												
1.80												
2.00	2	4.8	2	9.1	1	8.3	2	8.0			9	5.8
2.20											3	1.9
2.25												
2.29												
2.33												
2.40												
2.50											13	8.4
2.60												
2.67												
2.75												
3.00											1	.7
3.33					1	8.3					1	.7
3.50												
3.67												
3.80												
4.00												
5.00											3	1.9
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	42	100	22	100	12	100	25	100			155	100
Mean	1.02		1.18		1.38		1.22				1.37	

Appendix F-Continued

School of Natural Resources

Ratio	Conservation No.	Conservation %	Fisheries No.	Fisheries %	Forestry No.	Forestry %	Wildlife Mgmt No.	Wildlife Mgmt %	Wood Tech No	Wood Tech %	Total No.	Total %
.20												
.40												
.50												
.60												
.67												
.75												
1.00	12	100	5	45.5	9	33.3	2	20.0	3	18.8	31	40.8
1.17												
1.20												
1.25												
1.33			1	9.1							1	1.3
1.38												
1.40												
1.50												
1.60												
1.67												
1.75					2	7.4			4	25.0	6	7.9
1.80												
2.00			3	27.3	12	44.4	8	80.0	8	50.0	31	40.8
2.20												
2.25												
2.29												
2.33												
2.40												
2.50									1	6.3	1	1.3
2.60												
2.67												
2.75												
3.00			2	18.2							2	2.6
3.33												
3.50												
3.67												
3.80												
4.00					4	14.9					4	5.3
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	12	100	11	100	27	100	10	100	16	100	76	100
Mean	1.00		1.67		1.57		1.80		1.78		1.70	

Appendix F-Continued

School of Nursing

Ratio	Nursing		Total									
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	3	21.4	3	21.4								
1.17												
1.20												
1.25												
1.33	1	7.1	1	7.1								
1.38												
1.40												
1.50												
1.60												
1.67												
1.75	1	7.1	1	7.1								
1.80	2	14.4	2	14.4								
2.00	1	7.1	1	7.1								
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50	1	7.1	1	7.1								
3.67												
3.80												
4.00												
5.00												
5.20	3	21.4	3	21.4								
5.75												
6.00												
6.25												
6.33	2	14.4	2	14.4								
6.67												
7.00												
7.01-31.50												
Total	14	100	14	100								
Mean	3.10		3.10									

Appendix F-Continued

College of Pharmacy

Ratio	Pharm Chemistry No.	%	Pharma-cology No.	%	Pharmacy No.	%	Pharm Adm No.	%	No	%	Total No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	4	80.0			1	14.3	6	75.0			11	50.0
1.17												
1.20												
1.25												
1.33												
1.38												
1.40							1	12.5			1	4.6
1.50												
1.60												
1.67			2	100	5	71.4					7	31.8
1.75							1	12.5			1	4.6
1.80												
2.00					1	14.3					1	4.6
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00	1	20.0									1	4.6
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	5	100	2	100	7	100	8	100			22	100
Mean	1.40		1.67		1.62		1.14				1.24	

Appendix G

NUMBER AND PERCENTAGE OF COURSES BY COLLEGES, SCHOOLS, AND DEPARTMENTS EXHIBITING VARIOUS RATIOS OF SCHEDULED CONTACT HOURS TO CREDIT HOURS, WAYNE STATE UNIVERSITY

Ratio	College Lib Arts		Monteith College		College Education		College Eng		College Nurse		College Pharmacy	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67	3	.3										
.75	1	.1										
1.00	729	75.8	5	100	186	60.1	94	54.0	24	58.6	20	66.7
1.17												
1.20												
1.25	9	.9					2	1.1				
1.33	9	.9			10	3.2	7	4.0	3	7.4		
1.38												
1.40	2	.2										
1.50	42	4.4			12	3.8	7	4.0	1	2.4		
1.60	2	.2										
1.67	12	1.2			1	.3	3	1.7	1	2.4	4	13.3
1.75	1	.1					4	2.3	2	4.8		
1.80												
2.00	96	10.0			81	26.1	28	16.2	6	14.7	6	2.0
2.20	1	.1										
2.25	1	.1			6	1.9						
2.29												
2.33	3	.3										
2.40												
2.50	5	.5					5	2.9	1	2.4		
2.60												
2.67	1	.1					3	1.7				
2.75	1	.1										
3.00	41	4.3			1	.3	17	9.8				
3.33							1	.6				
3.50	1	.1										
3.67												
3.80									1	2.4		
4.00					12	3.8	3	1.7				
5.00	3	.3			2	.6						
5.20												
5.75												
6.00									2	4.9		
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	963	100	5	100	309	100	174	100	41	100	30	100
Mean	1.23		1.00		1.47		1.56		1.58		1.29	

Appendix G-Continued

Ratio	School Business No.	%	Gen Univ Air Sc No.	%	Gen Univ Mort Sc No.	%	No.	%	No	%	Total No.	%
.20												
.40												
.50												
.60												
.67					1	12.5					4	.3
.75											1	.1
1.00	87	96.7	1	33.3	2	25.0					1148	70.7
1.17												
1.20												
1.25											11	.7
1.33	3	3.3			1	12.5					33	2.0
1.38												
1.40											2	.1
1.50			2	66.7							64	3.9
1.60											2	.1
1.67					1	12.5					22	1.3
1.75											7	.4
1.80												
2.00					1	12.5					218	13.4
2.20											1	.1
2.25											7	.4
2.29												
2.33											3	.2
2.40												
2.50											11	.7
2.60												
2.67											4	.3
2.75											1	.1
3.00											60	3.7
3.33											1	.1
3.50											1	.1
3.67												
3.80											1	.1
4.00					1	12.5					16	.9
5.00											5	.3
5.20												
5.75												
6.00											2	.1
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	90	100	3	100	8	100					1625	100
Mean	1.01		1.33		1.83						1.33	

Appendix G-Continued

College of Liberal Arts

Ratio	Art		Biology		Chemistry		Econ		Eng Lang & Lit		French L & Lit	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67					1	2.1						
.75												
1.00	13	25.0	20	38.6	20	42.6	28	100	63	100	20	100
1.17												
1.20												
1.25	1	1.9			1	2.1						
1.33			3	5.8	1	2.1						
1.38												
1.40												
1.50			6	11.5	2	4.3						
1.60					2	4.3						
1.67			1	1.9								
1.75												
1.80												
2.00	3	5.8	18	34.6	9	19.2						
2.20					1	2.1						
2.25					1	2.1						
2.29												
2.33	2	3.8										
2.40												
2.50	3	5.8			1	2.1						
2.60												
2.67			1	1.9								
2.75					1	2.1						
3.00	30	57.7	2	3.8	4	8.5						
3.33												
3.50			1	1.9								
3.67												
3.80												
4.00												
5.00					3	6.4						
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	52	100	52	100	47	100	28	100	63	100	20	100
Mean	2.35		1.59		1.79		1.00		1.00		1.00	

Appendix G-Continued

College of Liberal Arts-Continued

Ratio	Geography		Geology		German Lan & Lit		Greek Lan & Lit		History		Home Ec	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75	1	3.6										
1.00	26	92.8	8	40.0	14	100	20	100	57	96.6	23	45.1
1.17												
1.20												
1.25			2	10.0					2	3.4		
1.33			1	5.0							2	3.9
1.38												
1.40												
1.50	1	3.6									17	33.3
1.60												
1.67			9	45.0							2	3.9
1.75												
1.80												
2.00											6	11.9
2.20												
2.25												
2.29												
2.33											1	1.9
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	28	100	20	100	14	100	20	100	59	100	51	100
Mean	1.01		1.34		1.00		1.00		1.01		1.35	

Appendix G-Continued

College of Liberal Arts-Continued

Ratio	Humanities		Hygiene		Italian Lan & Lit		Journalism		Math		Music	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67											1	1.8
.75												
1.00	10	100	9	100	6	100	17	94.4	48	98.0	41	69.4
1.17												
1.20												
1.25									1	2.0		
1.33												
1.38												
1.40												
1.50											6	10.2
1.60												
1.67												
1.75												
1.80												
2.00											7	11.8
2.20												
2.25												
2.29												
2.33												
2.40												
2.50											1	1.8
2.60												
2.67												
2.75												
3.00							1	5.6			3	5.1
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	10	100	9	100	6	100	18	100	49	100	59	100
Mean	1.00		1.00		1.00		1.11		1.01		1.29	

Appendix G-Continued

College of Liberal Arts-Continued

Ratio	Occupat Therapy No.	%	Phil No.	%	P.E. Men No.	%	P.E. Coed No.	%	P.E. Women No	%	Physical Science No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	8	47.1	25	100	1	5.0						
1.17												
1.20												
1.25											2	100
1.33												
1.38												
1.40												
1.50	1	5.8										
1.60												
1.67												
1.75												
1.80												
2.00	8	47.1			19	95.0	8	100	13	100		
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	17	100	25	100	20	100	8	100	13	100	2	100
Mean	1.50		1.00		1.95*		2.00*		2.00*		1.25	

*Physical Education-Men, Physical Education-Coed, and Physical Education-Women, 1.89

Appendix G-Continued

College of Liberal Arts-Continued

Ratio	Physics & Astronomy No.	%	Political Science No.	%	Psychol-ogy No.	%	Sematic Lan No.	%	Slavic & East Lan No	%	Social Science No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	14	56.0	35	97.2	37	97.4	19	100	23	100	2	100
1.17												
1.20												
1.25												
1.33	1	4.0			1	2.6						
1.38												
1.40	2	8.0										
1.50	4	16.0	1	2.8								
1.60												
1.67												
1.75	1	4.0										
1.80												
2.00	3	12.0										
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	25	100	36	100	38	100	19	100	23	100	2	100
Mean	1.28		1.01		1.01		1.00		1.00		1.00	

Appendix G-Continued

College of Liberal Arts-Continued

Ratio	Sociology Anthropology No.	%	Spanish Lan & Lit No.	%	Speech No.	%	Stat No.	%	Urban Plan No	%	Total No.	%
.20												
.40												
.50												
.60												
.67			1	4.8							3	.3
.75											1	.1
1.00	49	98.0	20	95.2	50	89.3	1	100	2	66.7	729	75.8
1.17												
1.20												
1.25											9	.9
1.33											9	.9
1.38												
1.40											2	.2
1.50					3	5.4			1	33.3	42	4.4
1.60											2	.2
1.67											12	1.2
1.75											1	.1
1.80												
2.00					3	5.4					96	10.0
2.20											1	.1
2.25											1	.1
2.29												
2.33											3	.3
2.40												
2.50											5	.5
2.60												
2.67											1	.1
2.75											1	.1
3.00	1	2.0									41	4.3
3.33												
3.50											1	.1
3.67												
3.80												
4.00												
5.00											3	.3
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	50	100	21	100	56	100	1	100	3	100	963	100
Mean	1.04		.98		1.08		1.00		1.17		1.23	

Appendix G-Continued

Monteith College

Ratio	Natural Science No.	%	Social Science No.	%	Total No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	2	100	3	100	5	100						
1.17												
1.20												
1.25												
1.33												
1.38												
1.40												
1.50												
1.60												
1.67												
1.75												
1.80												
2.00												
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	2	100	3	100	5	100						
Mean	1.00		1.00		1.00							

Appendix G-Continued

College of Education

Ratio	Art Education No.	%	Education No.	%	English Education No.	%	Ind Voc Ed No.	%	Library Science No	%	Music No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	12	31.6	56	75.7	3	100	5	10.4	12	100	10	76.9
1.17												
1.20												
1.25												
1.33			6	8.1								
1.38												
1.40												
1.50	2	5.3	2	2.7							1	7.7
1.60												
1.67												
1.75												
1.80												
2.00	14	36.8	8	10.8			37	77.1			1	7.7
2.20												
2.25							6	12.5				
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00											1	7.7
3.33												
3.50												
3.67												
3.80												
4.00	10	26.3										
5.00			2	2.7								
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	38	100	74	100	3	100	48	100	12	100	13	100
Mean	2.18		1.53		1.00		1.93		1.00		1.31	

Appendix G-Continued

College of Education-Continued

Ratio	P. H. Ed Women No.	%	Educat Psych No.	%	Rec Leadership No.	%	Science Educat No.	%	Spec Ed Voc Reh No	%	Total No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	20	48.8	13	81.2	14	73.7	8	66.7	33	94.3	186	60.1
1.17												
1.20												
1.25												
1.33	1	2.4	3	18.8							10	3.2
1.38												
1.40												
1.50	4	9.8					3	25.0			12	3.8
1.60												
1.67							1	8.3			1	.3
1.75												
1.80												
2.00	16	39.0			5	26.3					81	26.1
2.20												
2.25											6	1.9
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00											1	.3
3.33												
3.50												
3.67												
3.80												
4.00									2	5.7	12	3.8
5.00											2	.6
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	41	100	16	100	19	100	12	100	35	100	309	100
Mean	1.45		1.06		1.26		1.18		1.17		1.47	

Appendix G-Continued

College of Engineering

Ratio	Aeronautical No.	Aeronautical %	Chemical No.	Chemical %	Civil No.	Civil %	Electrical No.	Electrical %	Industrial No	Industrial %	Mechanical No.	Mechanical %
.20												
.40												
.50												
.60												
.67												
.75												
1.00	10	58.8	6	27.3	16	51.6	10	40.0	8	80.0	18	85.7
1.17												
1.20												
1.25			2	9.1								
1.33			3	13.6					1	10.0		
1.38												
1.40												
1.50	1	5.9	2	9.1			4	16.0				
1.60												
1.67			2	9.1	1	3.2						
1.75							4	16.0				
1.80												
2.00	1	5.9	3	13.6	5	16.1	3	12.0	1	10.0	2	9.5
2.20												
2.25												
2.29												
2.33												
2.40												
2.50					2	6.5						
2.60												
2.67					3	9.7						
2.75												
3.00	5	29.4	4	18.2			4	16.0			1	4.8
3.33					1	3.2						
3.50												
3.67												
3.80					3	9.7						
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	17	100	22	100	31	100	25	100	10	100	21	100
Mean	1.68		1.67		1.81		1.64		1.13		1.19	

Appendix G-Continued

College of Engineering-Continued

Ratio	Metallurgical No.	%	Eng Graphics No.	%	Eng Mechanics No.	%	Eng Orient No.	%	Mfg Process No	%	Total No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	7	41.1	3	42.9	16	88.9					94	54.0
1.17												
1.20												
1.25											2	1.1
1.33	2	11.8							1	20.0	7	4.0
1.38												
1.40												
1.50											7	4.0
1.60												
1.67											3	1.7
1.75											4	2.3
1.80												
2.00	6	35.3	1	14.2	1	5.6	1	100	4	80.0	28	16.2
2.20												
2.25												
2.29												
2.33												
2.40												
2.50			3	42.9							5	2.9
2.60												
2.67											3	1.7
2.75												
3.00	2	11.8			1	5.6					17	9.8
3.33											1	.6
3.50												
3.67												
3.80												
4.00											3	1.7
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	17	100	7	100	18	100	1	100	5	100	174	100
Mean	1.63		1.79		1.17		2.00		1.87		1.56	

Appendix G-Continued

College of Nursing

Ratio	Total No.	Total %	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	24	58.6										
1.17												
1.20												
1.25												
1.33	3	7.4										
1.38												
1.40												
1.50	1	2.4										
1.60												
1.67	1	2.4										
1.75	1	2.4										
1.80	1	2.4										
2.00	6	14.7										
2.20												
2.25												
2.29												
2.33												
2.40												
2.50	1	2.4										
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80	1	2.4										
4.00												
5.00												
5.20												
5.75												
6.00	2	4.9										
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	41	100										
Mean	1.59											

Apprendix G-Continued

College of Pharmacy

Ratio	Pharm Biol Science No.	%	Pharmacy Adm No.	%	Pharmacy No.	%	No.	%	No	%	Total No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00			8	100	12	63.2					20	66.7
1.17												
1.20												
1.25												
1.33												
1.38												
1.40												
1.50												
1.60												
1.67	3	100			1	5.3					4	13.3
1.75												
1.80												
2.00					6	31.6					6	20.0
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	3	100	8	100	19	100					30	100
Mean	1.67		1.00		1.35						1.29	

Appendix G-Continued

School of Business Administration

Ratio	Accounting No.	Accounting %	General Business No.	General Business %	Business Law No.	Business Law %	Business Writing No.	Business Writing %	Finance No	Finance %	Insurance No.	Insurance %
.20												
.40												
.50												
.60												
.67												
.75												
1.00	17	85.0	5	100	8	100	4	100	3	100	4	100
1.17												
1.20												
1.25	3	15.0										
1.33												
1.38												
1.40												
1.50												
1.60												
1.67												
1.75												
1.80												
2.00												
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	20	100	5	100	8	100	4	100	3	100	4	100
Mean	1.04		1.00		1.00		1.00		1.00		1.00	

Appendix G-Continued

School of Business Administration-Continued

Ratio	Office Mgmt Sect Trng		Mangmt		Marketing						Total	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	11	100	17	100	18	100					87	96.7
1.17												
1.20												
1.25												
1.33											3	3.3
1.38												
1.40												
1.50												
1.60												
1.67												
1.75												
1.80												
2.00												
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	11	100	17	100	18	100					90	100
Mean	1.00		1.00		1.00						1.01	

Appendix H

NUMBER AND PERCENTAGE OF COURSES BY SCHOOLS AND DEPARTMENTS EXHIBITING VARIOUS RATIOS OF SCHEDULED CONTACT HOURS TO CREDIT HOURS, WESTERN MICHIGAN UNIVERSITY

Ratio	School Arts & Appl Sc		School Business		School Education		School Art &Sc				Total	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67					1	.9	1	.2			2	.3
.75	2	1.0									2	.3
1.00	79	44.0	60	88.2	60	54.6	346	79.5			545	67.7
1.17												
1.20												
1.25	4	2.1					3	.7			7	.9
1.33	3	1.0			1	.9	5	1.1			9	1.1
1.38												
1.40							2	.4			2	.3
1.50	4	2.1			9	8.2	14	3.2			27	3.4
1.60	4	2.1									4	.5
1.67			4	6.0			4	.9			8	1.0
1.75							12	2.8			12	1.5
1.80												
2.00	83	43.0			7	6.4	34	7.8			124	15.4
2.20			2	2.9							2	.3
2.25												
2.29												
2.33												
2.40												
2.50			2	2.9			3	.7			5	.6
2.60												
2.67												
2.75												
3.00	8	4.2			26	23.6	10	2.3			44	5.5
3.33												
3.50					4	3.6					4	.5
3.67												
3.80												
4.00					1	2.9	2	.4			3	.4
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67	4	2.1									4	.5
7.00												
7.01-31.50					1	2.9*					1	.1
Total	191	100	68	100	110	100	436	100			805	100
Mean	1.67		1.12		1.55		1.19				1.38	

*10.00

Appendix H-Continued

School of Applied Arts and Sciences

Ratio	Agriculture No.	Agriculture %	Dist Education No.	Dist Education %	Home Economics No.	Home Economics %	Ind Educat No.	Ind Educat %	Ind Tech No	Ind Tech %	Military Science No.	Military Science %
.20												
.40												
.50												
.60												
.67												
.75	2	15.4										
1.00	10	76.9	11	100	19	67.8	4	10.3	17	28.3		
1.17												
1.20												
1.25											4	50.0
1.33					1	3.6	1	2.5				
1.38												
1.40												
1.50											4	50.0
1.60												
1.67												
1.75												
1.80												
2.00	1	7.7			7	25.0	30	76.9	38	71.7		
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00					1	3.6						
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67							4	10.3				
7.00												
7.01-31.50												
Total	13	100	11	100	28	100	39	100	55	100	8	100
Mean	1.04		1.00		1.33		2.36		1.89		1.38	

Appendix H-Continued

School of Applied Arts and Sciences-Continued

Ratio	Occupat Therapy No.	%	Paper Technology No.	%	Total No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75					2	1.0						
1.00	10	50.0	8	47.1	79	41.4						
1.17												
1.20												
1.25					4	2.1						
1.33	1	5.0			3	1.6						
1.38												
1.40												
1.50	2	10.0	2	11.8	8	4.2						
1.60												
1.67												
1.75												
1.80												
2.00	6	30.0	1	5.8	83	43.0						
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00	1	5.0	6	35.3	8	4.2						
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67					4	2.1						
7.00												
7.01-31.50												
Total	20	100	17	100	191	100						
Mean	1.47		1.82		1.67							

Appendix H-Continued

School of Business

Ratio	Accounting No.	Accounting %	Business Education No.	Business Education %	General Business No.	General Business %	No.	%	No	%	Total No.	Total %
.20												
.40												
.50												
.60												
.67												
.75												
1.00	13	100	4	33.3	43	100					60	88.2
1.17												
1.20												
1.25												
1.33												
1.38												
1.40												
1.50												
1.60												
1.67			4	33.3							4	6.0
1.75												
1.80												
2.00												
2.20			2	16.7							2	2.9
2.25												
2.29												
2.33												
2.40												
2.50			2	16.7							2	2.9
2.60												
2.67												
2.75												
3.00												
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	13	100	12	100	43	100					68	100
Mean	1.00		1.42		1.00						1.12	

Appendix H-Continued

School of Education

Ratio	Education No.	Education %	P.E. Men No.	P.E. Men %	P. E. Women No.	P. E. Women %	Rural Life Ed No.	Rural Life Ed %	Library No	Library %	Total No.	Total %
.20												
.40												
.50												
.60												
.67	1	3.2									1	.9
.75												
1.00	25	80.7	8	27.7	8	25.9	9	100	10	100	60	54.6
1.17												
1.20												
1.25												
1.33	1	3.2									1	.9
1.38												
1.40												
1.50	3	9.7	5	17.2	1	3.2					9	8.2
1.60												
1.67												
1.75												
1.80												
2.00	1	3.2	4	13.8	2	6.4					7	6.4
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00			11	37.9	15	48.4					26	23.6
3.33												
3.50					4	12.9					4	3.6
3.67												
3.80												
4.00					1	3.2					1	.9
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50			1	3.4*							1	.9
Total	31	100	29	100	31	100	9	100	10	100	110	100
Mean	1.08		2.29**		2.47**		1.00		1.00		1.77	

*10.00
**2.38

Appendix H-Continued

School of Liberal Arts and Sciences

Ratio	Art		Basic Studies		Biology		Chemistry		Economics		English	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	7	33.4	17	94.4	7	25.0	5	21.7	25	100	32	100
1.17												
1.20												
1.25												
1.33	2	9.5			2	7.1	1	4.4				
1.38												
1.40												
1.50			1	5.6	8	28.6	1	4.4				
1.60												
1.67							1	4.4				
1.75					1	3.6	9	39.1				
1.80												
2.00	12	57.1			9	32.1	1	4.4				
2.20												
2.25												
2.29												
2.33												
2.40												
2.50					1	3.6	2	8.7				
2.60												
2.67												
2.75												
3.00							1	4.4				
3.33												
3.50												
3.67												
3.80												
4.00							2	8.7				
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	21	100	18	100	28	100	23	100	25	100	32	100
Mean	1.60		1.03		1.57		1.88		1.00		1.00	

Appendix H-Continued

School of Liberal Arts and Sciences-Continued

Ratio	Geography Geology No.	%	History No.	%	Languages No.	%	Math No.	%	Music No	%	Phil Religion No.	%
.20												
.40												
.50												
.60												
.67												
.75												
1.00	16	80.0	32	100	40	100	24	100	22	56.5	12	100
1.17												
1.20												
1.25	3	15.0										
1.33												
1.38												
1.40												
1.50												
1.60												
1.67												
1.75												
1.80									2	5.1		
2.00	1	5.0										
2.20									7	17.9		
2.25												
2.29												
2.33												
2.40												
2.50												
2.60												
2.67												
2.75												
3.00									8	20.5		
3.33												
3.50												
3.67												
3.80												
4.00												
5.00												
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	20	100	32	100	40	100	24	100	39	100	12	100
Mean	1.09*		1.00		1.00		1.00		1.63		1.00	

*Geography, 1.06; Geology, 1.25

Appendix H-Continued

School of Liberal Arts and Sciences-Continued

Ratio	Physics		Political Science		Psychology		Sociolgy		Speech		Total	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
.20												
.40												
.50												
.60												
.67	1	6.7									1	.2
.75												
1.00	7	46.7	21	100	20	95.2	27	100	32	84.2	346	79.5
1.17												
1.20												
1.25											3	.7
1.33											5	1.1
1.38												
1.40	2	13.3									2	.4
1.50	2	13.3							2	5.3	14	3.2
1.60												
1.67	3	20.0									4	.9
1.75											12	2.8
1.80												
2.00					1	4.8			3	7.9	34	7.8
2.20												
2.25												
2.29												
2.33												
2.40												
2.50												
2.60											3	.7
2.67												
2.75												
3.00												
3.33									1	2.6	10	2.3
3.50												
3.67												
3.80												
4.00												
5.00											2	.4
5.20												
5.75												
6.00												
6.25												
6.33												
6.67												
7.00												
7.01-31.50												
Total	15	100	21	100	21	100	27	100	38	100	436	100
Mean	1.23		1.00		1.05		1.00		1.16		1.19	

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