

A SURVEY OF THE ZOOLOGICAL COURSE OFFERINGS IN
THE TWO-YEAR JUNIOR COLLEGES OF THE NORTH
CENTRAL ASSOCIATION COMPARED TO THE
COURSES RECOMMENDED BY A PANEL OF
JUDGES, WITH IMPLICATIONS AS TO
FUTURE TRENDS

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PREFACE

The life sciences, particularly courses in zoology on the junior college level, are those considered in this study. The courses and practices in the two-year schools of the North Central Association had been determined by a study of the existing catalogs. An opinionnaire was then sent to all of the instructors and presidents of these schools, to instructors attending an NSF Institute, to chairmen of zoology departments of selected four-year colleges of the North Central Association area, and to a selected group of nationally known specialists in science, science education, junior college education, and science publications. The purpose of the study is to determine the opinions of the respondents concerning what they think should be taught in the zoological sciences on the 13th and 14th year level. This is then compared with what was actually found to exist in these schools. Future trends in practices and courses are then sought.

Indebtedness must be paid particularly to Drs. Roy W. Jones and Kenneth E. Wiggins for their encouragement and valuable guidance throughout the length of this study. Additional aid and suggestions were willingly furnished by Drs. W. Ware Marsden, L. Herbert Bruneau and Jacob W. Blankenship.

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CHAPTER I

STATEMENT OF THE PROBLEM

Any instructor conscientious in his work and any division chairman or chief administrative officer charged with academic affairs should be concerned constantly with the curricular offerings in each of the disciplines. For, as research unfolds new secrets of significance, they should be synthesized into the content of the discipline concerned. Too, as the content of a discipline increases, broader principles need to be conceived and taught, excluding much of the minutiae. Eventually, as major principles are conceived and examined, their weight will probably reshape the approaches taken in teaching them. The "principles package" we call courses would then be altered, renamed, discarded and replaced by those which would most nearly meet the ultimate needs of the instructor, the institution and the student body.

With the great quantity of research occurring today, each discipline is deluged with "new significant contributions" of knowledge. Some areas, principally the sciences, are more researched than other areas. Probably the major stimulus to this vast increase in contemporary scientific research in the United States was the launching of Sputnik I on October 3, 1957. The American scientific community was stunned by such a feat that was not of their own doing. As the shock wore off and the smoke cleared, there was a rush to increase research, in the sciences particularly. There was also a concern about teaching methods

and curricular structure. Within a short time studies were initiated to make teaching more effective. Mathematics had an early start in the alphabet soup of curricular studies in the post-sputnik era. In February of 1958 a two-day conference resulted in the formation of a study that resulted in the SMSG (School Mathematics Study Group) (1:23) curriculum. In the summer of 1957 a small group of chemists met at Reed College, Portland, Oregon. From this conference came the basic idea of the CBA (Chemical Bond Approach) (1:44) curriculum in chemistry. In the school year 1957-58 the PSSC curriculum (Physical Science Study Committee) (1:48) was first used on a limited basis. The PSSC was a pioneer project of curriculum reform which brought scholar and teacher together in search of the truly fundamental concepts of the discipline. This approach has been used in succeeding curriculum studies. In 1959 the American Institute of Biological Sciences initiated the BSCS (Biological Science Curriculum Study) (1:41) under the direction of Dr. Bentley Glass of Johns Hopkins University and later under Dr. Arnold Grobman of Rutgers University. The long series of conferences and pilot studies resulted in the formation of three "new" versions of high school biology textbooks.

In February of 1964 representatives of seven influential and progressive institutions of higher education met at Berkeley, California to discuss "Principles and Models of Curricula Organization". (2:31) Each institution represented (Chicago, Purdue, Harvard, Johns Hopkins, Stanford, Wesleyan and Yale Universities) had independently initiated a curriculum study in the biological sciences on the collegiate level. In each case the study involved the formation of a "core" curriculum. CUEBS (Commission on Undergraduate Education in the Biological Sciences) (2:31),

founded in 1963, thus launched a series of conferences held throughout the nation to focus attention and study on the undergraduate curriculum in the biological sciences. CUEBS, as BSCS, was guided, staffed and funded by the American Institute for Biological Sciences with the assistance of the National Science Foundation.

Within a short period of time CUEBS, under the direction of Victor A. Greulich, initiated regional conferences. The Western Regional Conference met at Boulder, Colorado in August 1964 (3:1), the Midwestern Regional Conference met at Lawrence, Kansas in October 1964 (4:1), the Northeastern Regional Conference met at New York, New York in November 1964 (5:1), and the Southeastern Regional Conference met at Charlottesville, Virginia in April of 1965 (6:1). From each regional conference the reports indicated considerable agreement among the participants, but also brought to light fundamental areas of disagreement concerning curriculum and content of the life science programs.

Fully one year after the last regional conference had adjourned, the CUEBS commission realized that the standing panels on Preparation of Biological Teachers, Preprofessional Training for the Agricultural Sciences, Preprofessional Training for the Medical Sciences and Undergraduate Major Curricula did not adequately cover a significant and growing segment of higher education, this being the junior or community college. As Earl D. Hanson, Chairman of CUEBS, stated:

"These institutions, (community colleges), are in a real sense the unique educational innovation of our times in higher education. . . . It seems to me two factors give the two-year colleges a peculiar complexity. They are, on the one hand, regional in terms of their impact -- they draw locally for their students and the needs of the students reflect local vocational and educational needs. Thus, the colleges differ somewhat from

one locale to another. And, in addition, they serve at least five purposes: a) occupational education, including vocational and technical, b) adult or continuing education, c) general education, d) guidance and counseling education, and e) education for transfer to a four-year college program. From this brief enumeration. . . it is clear that facilities, faculties and curricula need extraordinarily diverse, but withal imaginative and energetic attention." (7:3)

The CUEBS commission then appointed a group, Panel on Biology in the Junior College (8:8) (later changed to Panel on Biology in the Two-Year College) (9:9) to work with those problems unique to the two-year school.

The community colleges, in discharging its responsibilities to a diverse student population with wide ranges of educational goals and academic abilities, have problems that are not found in senior colleges and universities, or for that matter, in junior colleges with selective enrollment requirements. Just being a two-year college which must prepare many of its students to transfer into the 15th and 16th year of a senior institution is a problem in itself: articulation with which senior college? Courses designed to serve the liberal or general education function are not always accepted by senior colleges without penalty to the transferring student. What are the educational needs and desires of the adult students who come to the community college after a day's labor in industry, shop, kitchen or field? They want education to advance in their livelihood, or they have become "functional illiterates" and want to retrain for a new livelihood. They want to study an area of interest so as to make life richer and more meaningful and satisfying or they are confused and bewildered by the many avenues of choice in higher education and are seeking some guidance so as to become more goal oriented. These are some of the

many kinds of people that fill the classes, day and night, in a community college.

Today there is much discussion about curriculum revision at all levels. Where is Biology going and what is the best vehicle in which to get there? Many studies suggest that a "core" curriculum in the life sciences is a necessity. A conference report found in Bio Science, 1964, states that, ". . . . some such core should be a part of the training of all future biologists irrespective of intended specialty" In the same article the author states, "Many American colleges and universities are currently reorganizing their undergraduate biology programs. Marked differences characterize the new curricula that have been or are being developed." (10:25) Chicago University has no biology course in the freshman year. This is true of Johns Hopkins and Stanford Universities as well. If several senior colleges in an area, to which a substantial number of community college graduates transfer, establish their own "core", then what "core" will the community college follow? The community college must, out of either desire or need, adhere to the demands of the senior institutions in its transfer area.

What general education requirements in the life sciences should be demanded of the terminal student in vocational-technical fields, as electronics, auto-body repair, data processing, or secretarial science? An equally frightening prospect is the student who enters the two-year terminal general education program and then decides to transfer to a baccalaureate program with a major concentration in the life sciences.

The problem that needs an answer then is: how well do the

practitioners and specialists feel the community colleges are providing life science education for all of its constituency? It is the intent of the author to show these practices and courses offered by the subject institutions and reflect them as accurately as possible using the catalogs as the source of information. This will give a fair representation of what courses are offered at the institutions and what policies are in force.

The opinionnaire which is based on the above information is so structured that the information received will reflect what the respondents think should be the courses and practices to be found in the two-year colleges of the North Central area. The information secured from the opinionnaire will be compared to comparable information secured from the catalogs to see if there are conflicts between what is in practice and what is stated as practices that should be. This method will also show where there are divisions of opinion on practices that should be in force.

It is hoped that from the opinionnaire there will be some insight into future trends that zoological education might take or practices that might be initiated. This study is an exploratory one seeking to know what various groups of people connected with zoological education, or education per se on the two-year college level, think concerning what courses or practices should be used by the schools studied.

Limitations of the Study

In order to give a common level for comparison of courses and departmental practices, certain limiting factors were enforced in this

study. In addition to this, limitations were placed on the respondents in order to confine the study to parameters that were manageable but meaningful. These limitations are spelled out in detail in the following paragraphs.

The first limiting factor was the colleges to be surveyed. In a study of this type it possibly would be more accurate to confine the study to those schools that have been standardized to the degree that they conform to the minimum standards of an accrediting authority. Realizing that even those schools belonging to such a regulatory agency still have wide latitude in curricular offerings and structure, it was deemed necessary that membership by all schools in the study would give the desired degree of uniformity of overall objectives and academic quality. Therefore, all schools surveyed in this study are or were members of the North Central Association of Colleges and Secondary Schools as of September 1965. (11)

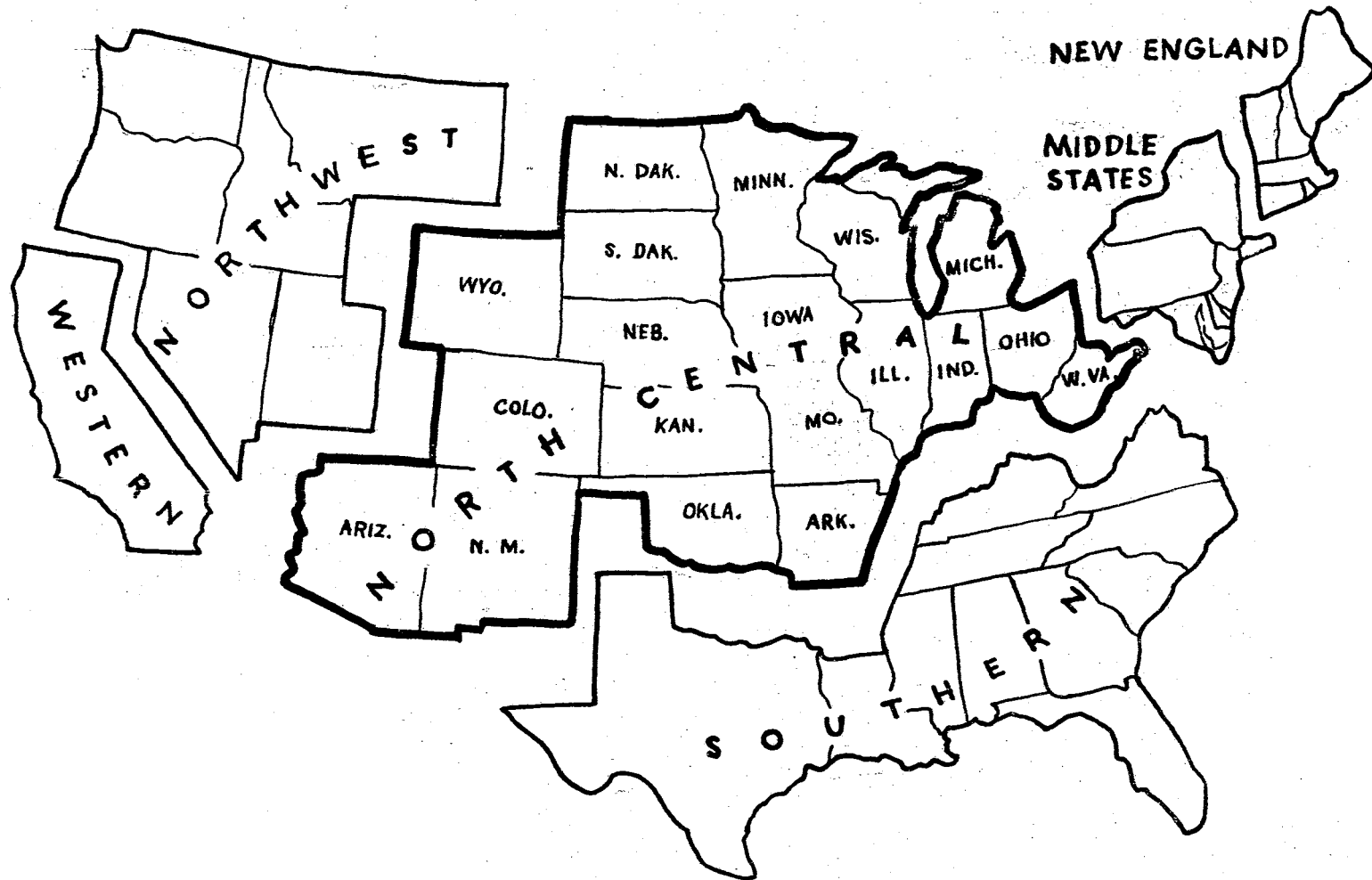
It was hoped at first to use both community junior colleges and two-year extension centers of universities in the North Central area. This would have added another variable to the study. The extension centers could not cooperate by supplying the needed institutional publications so that it became necessary to confine the study to just those institutions defined herein as community junior colleges. Eighty-three schools were then selected for the study.

To determine what the defined colleges are now offering in the zoological sciences it was decided to use those catalogs from each school that were published for use in the academic year 1965-66. This would confine the curricula to a specific time in space.

Respondents were selected by taking the above mentioned catalogs and determining the number of instructors of zoology and/or biology in each institution. An opinionnaire was sent to each person who would now be in that instructor slot. This would supply an instrument to all zoology and biology instructors in the subject institutions. The next group of respondents was the presidents of the selected eighty-three community junior colleges in the study. The third group of respondents was chairmen of the life science departments of senior colleges and universities in the nineteen-state area controlled by North Central Association. Fourth, a group of community junior college educators, biological scientists, biological science educators, curriculum experts, and an editor were asked to contribute their thoughts concerning the community junior college and its role in science education. Lastly, one group of thirty was surveyed in which all members were not from North Central schools. These were participants in the National Science Foundation Summer Institute held at Oregon State University, Corvallis, Oregon in the summer of 1967. The participants surveyed from this institute represented all of the regional accrediting agencies that cover the United States except one, that being the New England Association of Colleges and Secondary Schools, Incorporated. (See Figure 1) All of these individuals then comprise the population asked to respond to the survey instrument.

After a survey of the 1965-66 catalogs of the schools selected it was decided to confine the study to those subject areas that could be defined as belonging to the zoological sciences. The notable exception here being General Botany, or its equivalent, which was included because it is often offered as one-half or all of the biology

Areas Encompassed by the Six Regional Accrediting Authorities



requirement in some schools studied. All other botanical courses were automatically excluded from the study. Microbiology was excluded because it is generally a study of bacteria with little emphasis on protozoa and animal parasites. Such courses as Ecology, Evolution, Genetics and Nature Study were included since it was assumed that emphasis is expressed equally on plants and animals or that the underlying principles would be equally applicable.

Those courses included in Home Economics, Physical Education and Agriculture that have zoological bases were excluded since they are courses of an applied nature and cover many other areas not related to zoology. Examples of such courses are Child Development, Medical Self-Help and Animal Production. The notable exception here is Entomology. This course was found in the Division of Agriculture in the schools studied. Since this is most often offered as a course describing a natural group of invertebrate animals, their taxonomy, physiology, ecology and control, it was felt by the author that this course, as described, should be included in the study.

The study then is confined to courses offered and not to the content of the course nor the methods employed in teaching them.

Clarification of Terms

The terms listed and defined here will be used in this context throughout the paper. They are offered here so the reader and author will be approaching the paper from the same vocabulary frame of reference.

Community Junior College or Two-Year College - Those institutions of higher education offering but the 13th and 14th years of education

and which are independent of the direct control of administrations of senior colleges or universities. The school may be publicly or privately controlled.

Junior College - defined the same as the community junior college except that the institution views its function mainly as teaching the liberal arts to terminal and/or transfer students. Adult and vocational-technical education is not a usual function of such an institution.

Community College - defined the same as community junior college except that the functions are viewed as being 1) transfer programs, 2) vocational-technical terminal programs, 3) adult education, 4) guidance services and 5) community services.

Biological Sciences - those courses normally associated with plant and animal sciences of a pure science nature where laboratory sessions are usually required and the content is not taught or designed as immediately practical material.

Zoological Sciences - defined the same as biological sciences except that the course is confined to those courses which deal basically with animals or the courses in which the principles are equally applicable.

North Central Association, North Central, or the Association - refers to the North Central Association of Colleges and Secondary Schools, Chicago, Illinois, (See Figure 1) a regional accrediting authority.

Accredited - to have gained institutional membership in a regional accrediting association such as North Central.

Extension Center - a branch campus of a senior college or university that may function as a two-year college, but be controlled

by the administration of the parent institution.

Specialists - refers to those people who have received national or professional recognition for their knowledge and/or skills in community junior college education, biological science research and education (including curriculum) and editors of science texts, references and laboratory materials.

Presidents - unless otherwise designated will be defined as those administrative heads of community or junior colleges.

Chairmen - administrative heads of Biology or Zoology Departments of senior colleges or universities,

Instructors - unless otherwise designated are those personnel of community junior colleges that teach biology or zoology courses studied in this paper.

Life Science Division or Division - that grouping of instructors in the community junior college that teaches the biological science courses.

Core Curriculum or Core - a course or courses in the biological science curriculum required of all biology majors including pre-teaching and pre-medical students.

Respondents - those individuals selected to receive an opinionnaire and who returned it to the author with comment.

Majors - those students who are doing the greatest proportion of their college work in biology or zoology, to include pre-biology teachers and pre-medical students.

Non-Majors - all students other than those defined as being majors.

General Education - an array of college courses that gives the student a broad understanding of many areas of man's recorded knowledge.

Liberal Arts or Liberal Education - a student or curriculum which pursues the languages, sciences, philosophy, history, etc. That which composes the curriculum of an academic education as distinguished from technical or preprofessional education.

Credit - the semester-hour weight accredited to a course, dependent on the time spent in formal pursuit of the course content.

Integrated Course - an academic course where many areas are woven together into meaningful wholes. The wedding of biological sciences with physical sciences, plant with animal and all levels of biological structure and function from sub-cellular to organismic.

Survey Course - one designed to show or introduce the student to broad concepts without going into depth at any point; an introduction to a discipline.

Para-Medical - those students or curricula for fields of study and work that is associated with human medicine but not including that of the medical doctor.

Terminal - as terminal student or terminal curriculum or terminal credit. Defined as that which is to be completed or terminated in approximately two years or less of college work. This may be general or vocational in nature.

Extended Day School - a concept of higher education where the school is in operation continuously during the normal hours of the school day and extends into the hours of night (10:00 p.m. or later) with little or no change in curricular offerings. This is often referred to as the Evening School.

Adult Student - is that person who for various personal reasons cannot or will not attend college as a full-time student. He may maintain a full-time job for livelihood and attends school as a part-time student. He may or may not be degree oriented. In recent years this may also be a retired person attending school in the afternoons or at night.

Transfer - as transfer student or curriculum or credit. That which is not intended to end or be complete with the 14th year of education but articulated with the 15th and 16th year at a different institution, or as in the Missouri Plan, with a different level of the same institution.

Feeder Institution - one which basically prepares students to transfer to a senior college or university and in many cases to a specific one.

Local Credit - credit for a course that is either not intended to or will not transfer to a senior institution but can only be applied towards an Associate of Arts Degree.

CHAPTER II

REVIEW OF THE LITERATURE

Curriculum Research of the Biological Sciences by the Two-Year Colleges

"A curriculum may be a patchwork of professional idiosyncrasies or a succulent spread of departmental bait, but it also may be the integrated expression of an educational philosophy which none will relish save those endowed with the qualities that intellectual leadership connotes." (12:399)

Mr. Swanson was stating here some of the truisms of curriculum structure. The structuring of a curriculum that integrates courses so that the whole spells out the philosophy of the institution, its staff and constituency is a sign of true academic integrity and leadership. How many institutions can boast of such a curricular structure?

The two-year colleges have been well-known over the years for their lack of leadership in curricular areas. A typical example, that could be repeated manyfold, is recorded by R. D. Chadwick concerning the public junior colleges of Minnesota:

"The curricula of the Minnesota junior colleges are modeled very closely upon those of the University of Minnesota in content, names given to the curricula, and distinction between required and elective courses. The principal reasons for this are: (1) the University has been an accrediting agency for all of the colleges, and the courses have been designed to cover the same ground and to offer the same training as the freshman and sophomore courses at the University, to the extent that they are offered in the junior college; (2) a large proportion of the students, who continue higher education, liberal arts or professional, enter the University of Minnesota; and (3) the College of Science, Literature and Arts at the University has had two

divisions, called the Junior College and the Senior College, and the local junior colleges have undertaken to give the work required for entrance to the Senior College, or to the professional schools that require two years of pre-professional work." (13:344)

This situation which still exists, and is one of the realities of life in the circles of two-year colleges, is a reason why curricular research has seldom gone beyond the covers of the university catalogs. One real fact and one real fear of the two-year college is that many of its students must gain entrance into the 15th and 16th year programs of another institution. Entrance into that institution will be almost solely judged by what courses the student has taken and how well he did in those courses. Needless to say the closer the courses correspond to those of the university the fewer problems the transfer student will face.

The two-year colleges have, since their inception, been credited with and have taken credit for excellent instruction. In 1931 Wahlquist made this statement that can be used as an example. "If the junior college succeeds in no other respect, it has been worthwhile because of the emphasis it has given to better teaching at the higher levels." (14:480)

Better teaching usually connotes a sincere, dedicated, and professional individual who has pride in the profession and particularly in the area of specialization he is teaching. This too would infer that the teacher is experimenting with new techniques and methods of instruction and staying current with the new developments within his field of specialization. Some cases of this type of curricular research have been recorded over the years in professional journals. (15:379-81), (16:255-59), (17:26-27), (18:308-11), (19:363-64),

(20:151-53), (21:95-97). These articles were attempts to share findings and beliefs with others in the profession. Most of the trade secrets learned from personal research in the classroom and laboratory were not written or published, but were retained and used, and possibly shared with colleagues. This is to indicate that curricular research has been done in the junior colleges, but mainly to strengthen personal teaching competencies. It should be added too that curricular research has been done outside of the two-year colleges that directly affected their curriculum. Most of the research was done by the senior colleges and universities, and as they were adopted by the senior colleges, they almost automatically became a part of the two-year college as well.

The area of longest and greatest concern to two-year college administrators and researchers has been the terminal and/or general education courses. Recognizing that a majority of the students who enroll in the 13th year of the two-year college will not complete the first two years of work, there has been for many years a concern about the types of courses these people were taking. Although they profess an intent to seek the B.A. or B.S. degree, a high percentage will never reach this goal. Too, with the growth of the vocational-technical curricula and adult education, it was felt that the typical or classical transfer course geared to prepare a person to specialize in a particular field was grossly inadequate to properly educate the non-major in the principles of that field. It was usually not a course in itself, although introductory in nature, but was the beginning of a series of courses that were structured so as to train a specialist. Therefore, much discussion and research was forthcoming concerning the survey courses. Ingles stated that, "Such a course must be an end

in itself, and yet offer adequate foundation for further studies in the sciences." (15:379) He recognized that some people who professed, upon entry into college, only a desire for a 13th and 14th year education might then change their minds and want to go on for the B.A. degree. These people who had taken survey courses, say in zoology, would then find difficulties in meeting prerequisites or satisfying requirements upon transfer. B. Lamar Johnson found, among other things, that survey courses in 1938 lack appropriate textbooks, present too much material, require instructors with broad backgrounds of preparation; are superficial, difficult to transfer credit; and fail to provide foundation for advanced work. (22:463) Such a course is still needed and the principal tenet is correct. Not all of the faults found by Johnson have or will be corrected. The fault does not lie with the survey course for general education, but with the fickle desires of the immature adult who must decide what he wants to do for the rest of his life and often "guesses" wrong.

The literature is sparse with research written about the biological, or more specifically the zoological sciences. New methods of instruction have been sought and the merits of including or excluding certain principals within a course have been discussed, but the zoological curriculum as a whole has been ignored. The closest research to this paper is being conducted by the Commission on Undergraduate Education in the Biological Sciences which is affiliated with the American Institute of Biological Sciences. Their research, until recently, has been geared to the professional training of the biological scientist. However, a junior college committee has been added. Their main interest has been content of courses and curricula. The

junior college curriculum per se has been neglected by researchers and so the literature is lacking. It is with this recognized void that this project is concerned. Blocker, Plummer and Richardson have stated it most clearly, "As has been noted, the two-year college has made something of a fetish of not being research-oriented. If research is taken to mean the search for knowledge simply for the sake of knowledge, then it must be agreed that this role is more adequately performed on the university level. Aside from pure research, however, there is a serious need for applied or action research in all levels of education. The two-year college should not rely solely on the answers provided by senior institutions for the resolution of its unique problems." (23:5)

CHAPTER III

METHOD AND PROCEDURE

It is the purpose of this chapter to outline those methods used in gathering the data from the different sources. This chapter will also describe the procedures used in analyzing the data so that conclusions can be more adequately and accurately ascertained. The materials outlined here will appear in chronological order of their occurrence.

What is Now in Existence in the Two-Year College Zoology Curricula

In order to secure an official listing of courses and practices utilized in the subject schools it was decided to use the catalogs of these institutions as a source of the needed information. These publications would also furnish information pertinent to the study such as degree requirements, prerequisites, institutional philosophy, number of instructors, etc. All of this information was necessary for the author to structure the opinionnaire to be used to find what the instructors feel should be incorporated in the curriculum or required of the student. A listing of accredited two-year colleges of the North Central Association of Colleges and Secondary Schools was secured from the September 1965 edition of Accredited Institutions of Higher Education. (11) Only those colleges so listed as a two-year college were contacted, which excluded university branches. (See Appendix B) The current 1965-66 catalog was requested from each institution listed

and all were secured in a very short time after the request was made. It should be noted here that Virginia Junior College and Eveleth Junior College of Minnesota were in the process of merging schools and did not have an appropriate catalog. A catalog was never received from Hibbing Junior College of Minnesota. Data from these schools are therefore missing. A total of 80 colleges responded with catalogs.

Each catalog was then reviewed to gather the data which was then recorded on a tally sheet. This was the basis for Tables II through XI found in Appendix A. It was assumed that the catalog was official and reflected the current offerings in zoology accurately and were completely described. Each course was reviewed and such information as credit, lecture-laboratory hours per week, and any prerequisites necessary to take the course were recorded. Then, any other comments concerning the course such as "recommended for Pre-Medical students"; "limited to Nursing and Para-Medical students"; "Survey course"; "1st Quarter Plants, 2nd Quarter Animals, 3rd Quarter Humans"; "not full credit if Botany or Zoology taken"; etc. were recorded on the same tally sheet. This was done with each course listed and considered by the author as being a zoology course. General Botany was included in the study because it is often combined with Zoology to meet general education requirements in biology.

Development of the Opinionnaire

Since this study involved 83 institutions in a 19 state area it was decided that the opinionnaire would be the most suitable means of gathering the desired information concerning what should be in the zoology curriculum of the two-year college. Franzen and Lazarsfeld

(24:293) pointed out that the mail can carry the instrument to any destination desired. The questionnaire or opinionnaire on the other hand has a rather bad reputation of being abused and is the object of suspicion among researchers and respondents. (25:41) Therefore, the return on such an instrument is usually very low.

McGrath, Jelinek and Wochner stated that "There are very few standards for constructing a questionnaire save that of clearly worded, understandable items". (26:105) Koos (27:130) stressed brevity. Whipple (28:253) urged that the questionnaire be so constructed that the respondent will be required to write little in order to properly respond. Rummel (29:89) favored the multiple choice question for a questionnaire for it had fewer weaknesses and could be answered with a check mark. These suggestions and others were all considered in constructing the instrument used in this study. (See opinionnaire in Appendix G)

Each question used in the opinionnaire was stimulated by statements recorded from course description, prerequisites, etc. found in the catalogs. In many cases the alternatives to a question or statement in the opinionnaire were derived from similarities and/or differences observed between schools and courses. Other alternatives were formulated by this investigator because they seemed to be a natural alternative (differences or similarities) to those derived from the catalog descriptions. Many of the questions used in the opinionnaire were structured from materials observed in CUEBS News, the many journal articles reviewed concerning the biological sciences, and from personal experience.

Opinionnaire Recipients

Upon completion of the opinionnaire the next area of concern was who should receive the instrument to furnish the desired information? It was the opinion of this investigator that there are five groups of people that should be asked their views and prejudices concerning what should be taught by the two-year colleges of the North Central Association. It was believed that there would be and should be more than one way to view the place of the two-year college in zoological science education.

The first group of people asked to respond to the opinionnaire were the instructors of zoological sciences in the two-year schools of the North Central Association. Since they are the ones who are concerned daily with the zoology curriculum of the two-year college they would be the prime group to consult when seeking answers in this area. The catalogs were reviewed and where faculties were listed with teaching area, the total number of zoology instructors per school was derived. Where the faculty or teaching areas were not listed the number of zoology instructors was estimated. This was done by comparing student body size and the number of zoology instructors in the school. It was calculated by this method that there were 285 zoology instructors in the 83 schools to be studied. In many cases one or two extra opinionnaires were included per school if their past history showed substantial student population increase.

The second group to which opinionnaires were sent were the presidents of the two-year schools involved in the study. The names of the presidents were secured from the 1966 Junior College Directory and the

opinionnaire was addressed to them personally. Seventy-nine of the eighty presidents were mailed a copy of the opinionnaire and asked to return it. The one president deleted was the one from the investigator's own institution who co-authored the cover letter that accompanied the opinionnaire.

The third group deemed important by this investigator were the Chairmen of the Zoology Departments of senior colleges to which the junior college transfer probably enrolled to continue work towards the B.S. or B.A. degree. These are people who, it is hoped, are consulted by and consult with junior college zoology instructors on curricular matters. The chairmen, 55 in all, were selected by the author based solely upon the institution at which they were employed. The institutions, three per state except Wyoming which has only one four-year institution, were selected if they fell into one of the following categories: 1) state university, 2) teachers college, 3) agricultural college, 4) denominational college or university, if there was a two-year college or colleges of the same denomination in that state or region, or 5) a technical institute. (See Appendix C)

The fourth group that was consulted were those people who could be considered as specialists in junior college education and/or science education on a national scale. Eighteen such people were furnished with opinionnaires and a personal cover letter explaining what was desired. (See Appendix D)

The last group to be considered was a group of zoology instructors attending a National Science Foundation Institute at Oregon State University. This group was considered in the study when the author was asked by one of the respondents to the opinionnaire to include this

group in the study. It was hoped that new ideas would be contributed by this group.

In every instance when an opinionnaire was mailed to a prospective respondent a self-addressed, stamped envelope was attached to the opinionnaire so that no expense other than time would be required of the respondent. The opinionnaires were mailed and only those received before June 1, 1967 were considered in the study. The only exception to this was the opinionnaires sent to the NSF Institute members.

In order to know which school and recipient or recipients were returning the opinionnaires a code number was placed on the back of the opinionnaire so as to be as inconspicuous as possible. The code would furnish: 1) information as to the position held by the respondent and whether he was at a two or four-year school, 2) the number assigned to each school so it could be identified specifically and 3) the number of such potential respondents from that specific school. As an example: P2-74-1. This would be interpreted: (P2) = president of a two-year school; (74) = Casper College, Casper, Wyoming; and (1) = only one recipient of that description at that college. This code also fit easily into the data processing cards for analysis.

Each recipient was asked on the cover letter of the opinionnaire whether or not he desired a copy of the results of this study. If such results were indeed desired the recipient was to indicate such by marking an 'x' in the appropriate box and furnishing his name and address on the appropriate space on the cover letter.

The opinionnaire was so structured that a "forced" response was requested. That is, the respondent was requested to respond to one alternative of each item whether he completely agreed with that

response or not. Then if he felt so inclined he was given space at the bottom of each page to respond in his own words about the item in question. Some items were furnished with an asterisk which indicated that multiple alternatives could be used if the respondent deemed it necessary. He was still given the space for personal comments. It was hoped by the investigator that all possible alternatives would not be furnished and therefore some questions were structured to elicit a written response. The written responses, as well as the fixed responses, would then furnish some information that could be combined and analyzed so as to predict trends of future curricular change and structure, if indeed changes are warranted.

Procedures in Analyzing Data

The data from the opinionnaires was punched into IBM cards for machine processing. Each set of responses was coded so that several counts, according to pre-determined criteria, could be made and analyzed. This also would allow for cross-analysis on certain groups of respondents or items within the opinionnaire.

The print-out was designed to give raw counts for each division desired. These raw counts and their totals were then converted to percentages for final analysis. Siegel (30:31) has stated that where behavior (responses) is being measured the nonparametric statistic is finding increased use. Because of the varied group of respondents this investigator used percents to give clarity to the study. Unfortunately, Siegel also states that the nonparametric statistic increases in accuracy as the number of samples approaches the total

number of samples in the universe.

Below is an example of the print-out of data as it would appear for one question and as printed by the data processing machine.

IBM PRINT-OUT OF COUNTS FOR ITEMS

ITEM NO.	1.	2.	3.	4.	5.
A. President	1	1	0	1	0
Chairman	1	0	1	1	0
Instructor	3	3	0	2	1
Specialist	0	0	0	0	0
NSF	5	5	0	4	1
B. President	13	13	0	10	3
Chairman	20	0	20	15	5
Instructor	80	80	0	64	16
Specialist	5	0	0	0	0
NSF	30	28	2	26	4
C. President	3	3	0	2	1
Chairman	3	0	3	3	0
Instructor	13	13	0	12	1
Specialist	2	0	0	0	0
NSF	0	0	0	0	0
NO ANSWER					
President	1	1	0	0	1
Chairman	1	0	1	1	0
Instructor	0	0	0	0	0
Specialist	1	0	0	0	0
NSF	0	0	0	0	0

1. All Responses
2. From Two-year Schools
3. From Four-year Schools
4. Public Schools
5. Private Schools

The percents were calculated by the writer with the aid of an electronic calculator and posted in the margins of the print-out sheet.

In observing the print-out it can be seen that the data is totaled (Column 1) and then divided into predetermined groupings for easier comparison and analysis. The five groups of respondents are tallied

by their own groups for each possible response, A,B,C,etc., so that a quicker comparison can be made. Then within each of these groups the total responses are subtotaled to show the responses by Column 2) Respondents from Two-year Schools, Column 3) Respondents from Four-year Schools, Column 4) Respondents from Public Schools, Column 5) Respondents from Private Schools. The predetermined groupings were chosen so as to provide insight into differences that might not be evident if only the totals were provided.

This writer was influenced by written and verbal communication, to believe that there could possibly be differences of opinion concerning the junior college curriculum, between the presidents, instructors, chairmen of zoology departments of four-year schools, and NSF institute participants. Too, there seemed to be evidence in the literature that differences could possibly exist between public and private two-year schools. It was with these possible differences of opinion in mind that the categories were selected for analysis.

CHAPTER IV

PRESENTATION AND EXPLANATION OF DATA

The Population of the Study

The recipients of the opinionnaire have been previously described in Chapter III under the subheading "Opinionnaire Recipients", and shall not be repeated here. The population of respondents should be explained before moving into a presentation and analysis of their responses.

TABLE I

A BREAKDOWN OF THE STUDY POPULATION AND AN
ANALYSIS OF THE RESPONDENTS

Recipient Groups	Instrmts. Sent by Groups	Instrmts. Returned	% of Return	% by 2-year School	% by 4-year School	% by Pub. School	% by Pvt. School
Presidents	79	18	22.78	8.25	0.00	5.96	2.29
Chairmen	55	27	49.09	0.00	12.38	9.63	2.75
Instructors	285	137	48.07	62.84	0.00	50.00	12.84
NSF Instit. Participants	30	28	93.33	7.33	5.50	8.25	4.58
Specialist	18	8	44.44	0.00	0.00	0.00	0.00
Totals	<u>467</u>	<u>218</u>	<u>46.68</u>	<u>78.42</u>	<u>17.88</u>	<u>73.84</u>	<u>22.46</u>

The response to the opinionnaire was a disappointment considering the time and expense involved in its structuring and mailing. However, the results should be of value. The author was told that two-year school presidents are reluctant to complete opinionnaires. This could be because of a lack of time or historically because of a lack of interest

in research per se. This sounds somewhat indicting but the statistics of this study seem to bear this out. Seventy-nine presidents were mailed the opinionnaire and only eighteen of them responded, so that 22.78% of the presidents completed the instrument and returned it for inclusion. This was by far the lowest return.

The chairmen of zoology departments of four-year schools were next to the highest in percent of returns. Fifty-five chairmen were mailed the instrument, of which twenty-seven responded, with a 49.09% return.

It was estimated that 285 instructors were teaching zoology or biology in the two-year colleges of the nineteen state North Central Association. Of this group, 137 opinionnaires were completed for a 48.07% return.

The specialists in science and science education responded well considering the responsibilities they face. Eighteen specialists were requested to complete the opinionnaire of which eight responded. This represented 44.44% return from this group.

The National Science Foundation participants at Oregon State University were somewhat of a captive audience, but they were free to respond or not as they saw fit. Thirty participants were asked to respond, of which twenty-eight completed the opinionnaire for a 93.33% return from this group.

All in all 467 opinionnaires were mailed to various groups. This was a final total return of 218 or a 46.88% return over all. The statisticians state that the closer the population total reaches the number in the complete universe the more valid the statistic. Psychologically and pragmatically, a strong case could be argued for the return in favor of those people who are interested enough in the question under

consideration that they spent the time to complete the instrument and make sure it was returned for analysis. There is a feeling by this author that these are the heavily weighted valid respondents.

The schools selected were analyzed as to whether they were public or private, and whether they were two-year or four-year schools being represented by the respondents. The two-year schools were quite naturally in the majority with 78.42% of the respondents representing the two-year schools, while 17.88% of the respondents were representing four-year schools. As would be expected, the respondents representing the public institutions were in the majority, 73.84% to 22.46% from private schools.

An Overview of the Study

It is the intent of the author to present this chapter to show the results of two facets of the study. The results will be graphically and descriptively presented.

The collection of data for the study has taken two routes. First of all, the catalogs from the participating schools were reviewed and all data concerning the zoological sciences were extracted and categorized in a series of tables to be found in Appendix A. It was believed that this means of data collection would give an accurate picture of what the 83 community junior colleges of North Central Association were trying to present in their life science programs. It will be noted in some of the tables that the totals will exceed 83. Many of the subject schools offer more than one course of a single title and/or description, so that the total of the study seems inflated. This section of the study, and the courses described, will be treated as the

total number of courses offered by the total number of schools.

The second phase of the study is concerned with the data collected from the opinionnaires. As stated previously the opinionnaire was structured to a large extent from materials collected from the catalogs. It is hoped that the two kinds of data may be compared to show the relationships of what is actually being offered in the colleges to what the selected groups of respondents feel should be offered by the respective institutions.

Since the catalogs did not cover all of the areas desired by the author, other items were selected and included in the opinionnaire which do not have comparable data from the catalogs. These were items of interest and importance to the study.

From these two approaches eleven categories of concern have been structured. The areas are delineated as follows: 1.) Factors affecting biology majors, 2.) The course General Biology, 3.) Time involved in biology courses, 4.) The general education or non-major, 5.) The adult student, 6.) The terminal student, 7.) Credit hours, 8.) Laboratory, 9.) Course prerequisites, 10.) Core curricula and 11.) Miscellaneous areas.

Since it was the intent of the author to have the respondents select one of the given alternatives provided in the opinionnaire statement, it was recognized that this might not be the alternative that they would have preferred if given a free choice. These free expressions will be incorporated when, in the mind of the author, they express a point about an item that should be considered.

Presentation and Explanation of Data Collected From
Catalogs and Opinionnaires

Tables II through XI will reflect the practices of the subject institution as shown in the catalogs. Tables XII through LXII will reflect the answers contributed by the various opinionnaire groups. It will be noted that although each respondent was requested to answer each item not all were so inclined to respond. However, remarkably few ignored answering. To some a few items were not applicable.

Each of these tables are structured so as to give the following information about each item of the opinionnaire.

First, the item question or statement is given at the top of the table. At the left margin of the table each alternative offered as an answer to the question or statement is then listed. Under each alternative is the name of the group(s) who responded to that item (Tables II through LXXII). If one or more groups did not respond the group name will not appear there. Below the list of alternatives are then listed those members of a group(s) that did not wish to respond to any of the alternatives provided. Those tables structured from the catalogs will not show such detail as outlined above but will show the raw and percent scores as tabulated from the catalogs.

The columns entitled "Totals" show two columns of percents and one column of raw scores. The raw scores are the actual counts of respondents answering a certain way. The asterisked figures of this column indicate the total number of responses for that alternative. The percentages to the right of the "Total Raw Scores" are the percentages of the total number of responses regardless of respondent. The percentage

column to the left of the "Total Raw Scores" represents the percent of responses to an alternative by groupings of respondents, i.e. the percentage of presidents only responding to a particular alternative.

The column headed as "Two-Year" refers to those answers, both raw and percent, from respondents of two-year colleges only. The next column headed as "Four-Year" represents the raw and percent scores from those respondents of four-year colleges. Likewise, the columns indicated by "Public" and "Private" represents the raw and percent scores from the respondents representing private schools and public institutions.

The responses to each item of the opinionnaire will be treated basically in table form as described above. The remainder of this chapter will be devoted to describing, and where necessary, clarifying the question or statement and the alternatives that were chosen by the respondents. An attempt will be made to summarize the data as the rationale for its collection is presented. The presentation and explanation of the data will be presented in groups or blocks according to the specific interest area it was designed to analyze.

General Biology

The one course chosen for analysis was General Biology. This is a course which is considered by some a course not of collegiate level, while others consider it for non-majors. In recent years there has been a trend toward increasing the scope of this offering and making it beneficial to major and non-major alike. With this factor in mind, several questions were structured for the study.

One such question is analyzed in Table XII, "General Biology

should be considered a remedial course and not offered for college credit." The answer by the respondents here was an emphatic "no". Only one respondent answered that the course was not collegiate. A full 100 percent of the specialists said "no". The feeling that General Biology was collegiate in nature was rated somewhat higher by respondents of private schools (93.87%) than respondents from public schools (86.33%). Overall (88.53%) the feeling was that General Biology still had a place as an introductory undergraduate course. Table II shows that in North Central Schools 73.44% of the schools have a General Biology course in the curriculum, while 9.63% of the schools have two courses by this title (Table III).

There has been some feeling that since the introduction of BSCS biology in high school instruction has been upgraded so that such a course as General Biology is no longer needed. This statement was then offered to the respondents. "Because of the introduction of BSCS programs in many high schools the General Biology course in the community junior college should be eliminated." (Table XIII) Three instructors, all from public colleges, felt that this should be done. Nine people (4.12%) felt that there are some colleges in which BSCS has made enough impact to warrant the elimination of General Biology. The vast majority (90.36%) of the respondents felt that BSCS had not made sufficient impact, at least at this time, and that General Biology on the college level was still needed. The Executive Director of CUEBS, Victor A. Greulich, has stated that, "a year of general biology may be the best possible solution to the problem of introductory courses". (31:16) The majority of the respondents seem to agree.

Is the learning process of the non-life science major so different

that special courses must be structured to meet his needs? Since the needs of both major and non-major are the principles of any discipline it would seem that a common course showing the basic foundations of the discipline would suffice all. Some, however, feel that General Zoology and/or General Botany would as easily meet the general education needs of the liberal arts major as would General Biology. Mr. Greulich stated, "A non-major might very well get more substance by taking a year of botany or zoology or microbiology, particularly if he has had a good high school biology course." (31:15) Table II shows that 69.87% of the schools studied have General Zoology and 72.28% offer General Botany. What then did the study group feel was the better approach to biological training of the liberal arts student? In Table XIV only ten respondents, or 4.58%, felt that General Zoology or Botany were the courses to meet the needs of this student. While some 93.10% of the respondents chose General Biology, there was disagreement as to how this should be accomplished. Thirty-nine and forty-four hundredths percent of them felt that a special course for non-majors would be the better approach, while 53.66% felt that non-majors should take a General Biology course with majors. In Table XIV it is interesting to note that the specialists prefer the separate course for liberal arts majors (12.50%), which is greater than any other group, while respondents from private colleges prefer the same course regardless of major designation. The Northeastern Regional Conference of CUEBS, held in New York, reported that a first-year course in biology should not distinguish between major and non-major. (5:2) This feeling is not necessarily borne out by the respondents from the North Central colleges.

Closely tied to the previous question is one which was posed for the respondents. What course(s) would be recommended for the first-time student entering as a non-biology major? There are the traditional courses as General Zoology or General Botany that could complete the usual requirement of one year of life science. General Biology could be used either as a full year or as a semester course in combination with some other course to complete the year. Which approach or approaches would be most suitable? In Table XV several alternatives are suggested. General Biology, a full year in duration, was the course most often suggested as the one to fulfill the general education needs of the non-major. This was selected by 52.29% of the respondents. It is interesting to note that four-year and private schools suggested this alternative most, 64.10% and 63.26% respectively, while two-year (44.70%) and public schools (49.06%) listed it somewhat less. A combination of two courses, Biological Science Survey and Physical Science Survey, was suggested as the next most popular means of meeting the science requirement for general education with 30.27% of the respondents suggesting this combination. General Biology, one semester in duration, was third most popular, with 22.01% suggesting this course. General Zoology and General Botany, in combination, one semester each, was selected by 12.38%. The least acceptable means of meeting the life science requirement by a non-major was to offer either General Zoology or General Botany for the complete year. Only 5.50% of the respondents so answered. The respondents then feel much as the CUEBS conferees did in recommending a full year of biology for non-majors.

The two-year school has found much favor and much work to do with the adults of its district in the evening school. The evening school

was designed in many instances to give an outlet to the community and has been considered less than college level in many instances. With this in mind the question was presented concerning the type or types of biology courses that should be offered to this group (Table XVI). Table V shows that only three schools (3.61%) reported special general biology courses for the evening school student and two (2.40%) offered a course entitled, Introduction to Biological Science for the technical-terminal students only. The respondents (58.25%) felt that the evening school student should be afforded the General Biology course regularly offered at the institution. Only 1.83% of the respondents thought a course of a less academic nature should be offered this group. About one third of the respondents (35.32%) felt that both types of courses should be offered for the adult student at night.

The terminal student is not necessarily the vocational or technically oriented student, but may be a liberal arts student who cannot, for various reasons, reach for the B.A. degree. What courses would be recommended for this group of students? Again, three courses were suggested most by the respondents as in Table XV. In Table XVII one year of General Biology was suggested by 39.90%, General Biology Survey and Physical Science Survey by 32.56% and General Biology, one semester, by 30.73% of the respondents. Surprisingly, 7.79% felt that no biological science was necessary for these students. As noted previously, General Zoology and General Botany was suggested by only 3.21% of the respondents.

If a course is to be used to replace the traditional General Zoology and General Botany courses, that is a General Biology course, what must be the duration of the course? (Table XVIII) A sizable

group (13.30%) felt that it would take more than one academic year to equal the content of these courses. To this author, a surprising 3.70%, or eight people, felt that one semester would be sufficient time to accomplish this task. Those who felt that a full year would be necessary to complete such a course were the remaining 81.70%.

It was obvious from the catalogs that many schools had a hierarchy of introductory courses. Some schools would allow General Biology to be used as an introductory course in place of General Zoology or General Botany, while others allowed it to precede these courses. Other schools would remove or disallow credit earned in General Biology or General Zoology if both were taken. In Table VII it will be noted that fourteen schools, or 16.86% of them, would not allow full credit, if any, when General Zoology or General Botany was taken also. Therefore, these two items were placed in the opinionnaire to see what was considered fair and educationally sound by the respondents. Table XIX shows the thinking of the respondents if General Biology is taken first and then followed by General Zoology or General Botany. What should be done about credit for one or both courses? In Table XX the sequence of courses is reversed. Should full or partial credit be withheld if General Biology is taken after either General Zoology or General Botany has been completed? There was a relatively clear distinction between the two situations as revealed by the replies of the respondents. If General Biology is taken first 63.76% of the respondents favor giving credit in full for both courses. (Table XIX) Some 31.18% of the respondents believed that credit should be altered in some way with 17.88% reducing it and 13.30% withholding credit completely. A higher percentage of the private school respondents

avored reduction (24.48%) over completely withholding credit (10.20%). In Table XX a different picture prevails for 68.34% feel that some adjustment of credit should be made if General Biology follows General Zoology or General Botany. Some 46.33% favor withholding credit completely while 22.01% feel that credit for General Biology should be reduced. Still, 25.68% feel that regardless of the sequence full credit should be given if the course is successfully completed. It is interesting to note that the NSF group was the highest percentage-wise (42.85%) in wanting to allow full credit while presidents of two-year schools and chairmen of four-year school life science departments were highest percentage-wise (55.55%) for wanting credit withheld.

Table XXI is somewhat related to the question covered in Table XX, but is directed to majors specifically. Is there a high degree of overlap between a course in General Biology and General Zoology or General Botany or is it a foundation course on which the latter two can build? Some 81.19% agreed that General Biology should be allowed toward a major. There were 39.45% who wanted to qualify this and state that if it were not a survey course they would allow it. Some 51.28% of the four-year school people agreed to this last statement. Those who said "no" were but 15.59% of the total.

Science has been heralded as possessing some unique qualities and equally unique problems that can best be taught and expressed in a laboratory situation. Laboratory for many is a time-consuming process of doubtful value, particularly to the non-science major. Is this type of instruction necessary for this group or could the material be covered as well by a different means, if not omitted altogether? What do scientists and educators feel concerning the laboratory session for the

liberal arts major? A high proportion, 86.23%, of the respondents felt that laboratory was an integral part of science and General Biology instruction regardless of the student being taught, and an additional 6.88% felt that the laboratory showed a unique phase of science.

(Table XXII) A full 100% of the specialists agreed with this statement. Less than one percent (0.91%) believed that laboratory was not essential for this group of students. Audio-visual materials were not accepted well by these respondents (3.21%) as a suitable substitute for laboratory for the liberal arts student.

Is the adult or "night school" student a special breed of student that should not "bother" with the life science laboratory, or is this experience necessary for the complete education of all students regardless of time of day or age? (Table XXIII) Again, a high percentage, 77.98%, felt that laboratory is an integral part of science instruction, and another 5.50% felt that laboratory is a unique phase of science instruction. Again, 100% of the specialists express this belief. The private school respondents rated higher (87.75%) than the public school respondents (73.91%) and the presidents felt most strongly about laboratory (73.73%).

If General Biology is offered as an introductory course to majors and non-majors, as recommended by the CUEBS panels, and as has been expressed by a high percentage of the respondents of this study, should it require a prerequisite? Some schools in the study had prerequisites for the introductory courses. Many of these were suggestions and not ironclad regulations. Some schools set a minimum score to be attained on a national achievement examination, while others suggested the completion of high school science courses with a minimum grade to enter

the life science program. Table XXIV helps furnish some of the answers to these questions. This being a multiple answer question some respondents gave more than one answer. Some 71.10% of the respondents believed that no prerequisite should be required of General Biology. The least enthusiastic groups for eliminating a prerequisite were the chairmen of four-year schools (62.96%), and the specialists (62.50%). High school chemistry as a prerequisite was the most popular choice (20.18%) and 22.44% of the private school respondents favored this. The next most popular prerequisite was a minimum score on a national achievement examination (16.97%). Again, the private schools were most in favor of such a prerequisite (20.40%). High school biology was the third most popular prerequisite (16.05%) with the four-year schools desiring this most of those who selected it (20.51%) and the private schools desiring it least (12.24%). High school advanced biology was not popular at all, receiving only 2.29% of the selections. It is most interesting to note that in no case were any of these proposed prerequisites spelled out in the catalogs, as reflected in Table X, as being a prerequisite for General Biology.

General Biology on the collegiate level may lead to two routes. It can be the course taken to satisfy the general education requirement or the first course in a sequence of those to be taken by the life science major. Is this course the proper course to be considered as a prerequisite for all other life science courses? Slightly less than one-half (46.33%) expressed a belief that General Biology should be the prerequisite for all other life science courses to follow. The four-year school respondents however, expressed a much stronger desire for this course as a prerequisite (69.23%) as did the private school

respondents (57.14%). Some 27.98% thought that it should be a prerequisite for some courses, but not all in the major sequence.

It would seem that if two courses of the same title and description (Table III) are offered by a single institution they should vary in some manner or they could not be justified. If they do vary, then how should the variance manifest itself; theory, laboratory or emphasis? It appears (Table XXVI) that if two General Biology courses are offered by the same institution the theory content should not vary between the courses. Only 1.37% of the respondents believed that it should. Only 4.12% of the respondents believed that the laboratory content should vary between the courses. A sharp contrast existed between the remaining respondents with almost half of the remaining respondents expressing opposite beliefs. Some 37.15% held the belief that if two General Biology courses were offered by one institution the courses should vary in both theory and laboratory content, that is, they should be two different courses. In opposition, on the other hand, 45.41% believed that the two courses should cover the same materials in theory and laboratory, but the points of emphasis should vary.

One of the few questions to deal with content is covered in Tables XXVII and XXVIII. What should be the philosophical basis for the construction of a course if it is to be offered to the liberal arts or general education major? Should it hinge on basic principles of biology or should it deal primarily with the human animal since these are not biology majors? Is "biology" biology regardless of the students' intentions in the future? In this same vein, should the foundation laid for the non-major differ from that of the major? It appears that there is little difference in the needs of the two groups.

Edward A. Steinhaus believed much this same way when he stated, "For the undergraduate, be he a major or a non-major, it is essential that he be introduced to biology as an integrated whole. Rather than being subjected to beginning courses in each of the numerous branches or subdivisions of biology or forced to choose one among them, he should obtain a solid overview of biology. . . ." (32:10) The Midwest Regional Conference sponsored by CUEBS stated that, ". . . .the introduction course should be based on important biological concepts and principles, . . . the same course should be taken by both major and non-major." (4:2) The respondents selected the alternative, "an integrated course where plants, animals and humans are used only as examples to demonstrate a process, function or structure as well as the chemical and physical aspects of life," 61.46% of the time (Table XXVIII) for liberal arts majors and 59.17% of the time (Table XXVIII) for biology majors. The greatest supporters for this alternative were the four-year and private schools with 76.92% and 67.34% respectively for liberal arts majors. These two groups were strongest in support of this alternative for majors as well with 74.35% from the four-year schools and 73.46% from the private schools. The remaining respondents believed that liberal arts majors should possibly deal with more human biology (17.43%) than should biology majors (3.21%). The strongest emphasis for General Zoology or General Botany was for majors. However, only 22.01% chose this alternative.

General Biology Summary

It was the general feeling that General Biology was a very legitimate collegiate course and the secondary school BSCS curriculum had

not altered its usefulness. The course should be offered to majors and non-majors alike and they should take it together. The course should be generally one year in length and should cover basic biological principles regardless of the student's major. However, some stated that if liberal arts people took the course it should be slanted towards the human animal. These respondents were in the minority.

If General Biology is not to be offered to the non-major and terminal student then some one-third of the respondents preferred a combination course of General Biology-Physical Science Survey of one year's duration. The Evening School and Terminal student should receive the same General Biology course as that offered to regular students except that some respondents felt that a one semester course would be sufficient.

The sequence in which a General Biology course is taken is important. If it is taken first then other courses could be taken without any loss in credit. There were strong feelings that if the course were taken after other life science courses, the credit should be reduced if not dropped altogether. Laboratory was found to be necessary as a part of science and General Biology instruction, regardless of the student being taught, the time of day, or his age.

General Biology needs no prerequisites although high school chemistry was mentioned most as the prerequisite desired. A demonstrated academic ability was also mentioned. Past academic experience in biology was considered to be of little importance. General Biology as a prerequisite for other life science courses was considered to be proper. If two courses are offered by the name General Biology, the general feeling was in doubt. Almost 40% felt the total course contents

should vary. For all practical purposes these are two separate courses. Some 45% thought the content should be the same, but the emphasis on principles and details should vary between courses.

In some notable cases the private and four-year schools had stronger feelings concerning these items. General Biology was a true collegiate course and should be the logical first life science course for first year students. Laboratory for all students was more important to the private school respondents than to all other groups outside of the specialists. General Biology as a principles course for majors and non-majors alike was more strongly advocated by the four-year and private school than any other groups.

The Biology Major

It has been demonstrated so far that the respondents and a majority of the CUEBS panels favor an introductory General Biology course for majors and non-majors alike. Even with this fact well established how does the General Zoology course rate as the initial life science course for majors and consequently, as a prerequisite for most, if not all, zoology courses to follow? Greulich has stated, "I suspect good introductory courses in botany, zoology, and microbiology are often more coherent and illuminating than equally good general biology courses and probably generally better taught." (31:15) Thomas S. Hall has expressed a somewhat different view concerning the biology major when he stated, ". . . a free choice between freshman botany and freshman zoology is increasingly considered inappropriate. . . the institution with core programs expect the prospective major students to take either general biology or both botany and zoology." (2:31-33)

The question here posed is whether "General Zoology of one year duration should be the prerequisite for all other zoology courses in the undergraduate curriculum?" (Table XIX) Some 57.33% of the respondents stated that it should not. The private schools were most emphatic showing 69.38% against. On the other side 39.44% of the respondents felt that General Zoology should be the prerequisite for all other zoology courses. The two-year, public schools, and presidents were most for this proposal with 40.35%, 42.23% and 55.55% respectively for having General Zoology as the introductory course in the zoological science sequence.

There has been much discussion on what courses the major should take and when. The CUEBS Northeastern Conference stated simply that "All biology majors should have general and organic chemistry, general physics and a year of college mathematics." (5:7) Steinhaus, speaking of the core requirement at the University of California at Irvine, stated that majors had completed by the end of the sophomore year, ". . . physics, mathematics, and a year of chemistry plus elementary biology." (32:11) Some suggestions range from no biology until the sophomore year to starting the core program in the junior and senior years. Dr. Grobstein of the University of California at San Diego states, however, that ". . . I am particularly opposed to postponing the beginning of biological training while background in the physical sciences is acquired." (33:29-33) The respondents (Table XXX), 68.34% of them, thought much as Dr. Grobstein and suggested an introductory biology course with mathematics or chemistry in the freshman year, with two-year and public colleges indicating this choice, 71.34% and 70.80% respectively. Some 27.06% thought that mathematics and chemistry should

be completed in the 13th year in order to start the introductory biology in the 14th year. In opposition to the previous alternative, the four-year and private schools (37.73%) were the greatest proponents of this selection. No segment of the population thought that the two-year college should furnish only background courses so that biology courses could be started in the 15th year at another institution.

There is a recognized need for the physical sciences and mathematics background for the biological science student. The Southeastern Regional Conference of CUEBS recognized the desirability of "two years of chemistry, a year of physics, and a year (or, if possible, two) of mathematics for all biology majors." (6:2) This is for the B.S. degree level. Steinhaus again states, that for graduation at the Irvine Campus a biology major is "required to present a year of physics, a year of calculus, and five quarters of chemistry for graduation. . . ." (32:11) Other suggestions in the same general vein are to be found in the literature. What do the respondents to this study think concerning the requirements, in physical science and mathematics, on the 13th and 14th year levels? Some 88.53% of the respondents in Table XXXI, favored Inorganic Chemistry as a requirement. The specialists were the least enthusiastic about the requirement (62.50%). Organic Chemistry scored 70.64% of the total respondents. The four-year schools were least interested in this response with 53.84% for it. Biochemistry was not nearly as well received (11.92%) as the other chemistry courses mentioned. Again the four-year schools were least enthusiastic with only 7.69% favoring its inclusion. Mathematics through calculus was supported well by the four-year and private colleges with 74.35% and 73.46% respectively, while the total reporting

this response was 58.25%. The chairmen of four-year school zoology departments were most enthusiastic for this response reporting 77.77% acceptance. Probability and Statistics and Geology were rated low with 11.46% and 15.13% reported respectively. General Physics was well accepted by 59.17% of the respondents. Private colleges responded, least of all the respondents, for this requirement with 42.85%. The four-year schools were next lowest with 53.84% response to this alternative, however, the chairmen of four-year school zoology departments rated quite high with 62.96% acceptance.

What do two-year schools offer in the zoological sciences that a major could take? Table II shows there are 16 courses listed at least once by the 83 schools of North Central that could be applicable to a zoology majors curriculum, and two that are doubtful. The two doubtful courses are Introduction to Biological Science found in 5 schools and Nature Study found in but four schools. These were usually described as being for non-majors, terminal-technical, or adult night school students. The courses appearing most in the 83 colleges were General Biology in 61, General Botany in 60, General Zoology in 58, and Human Anatomy-Physiology in 42 schools. These four courses were found in some combination in over one-half of the schools, but this would naturally be expected. Comparative Anatomy in 26, Genetics in 19, and Ecology in 14 schools were the next three courses in order of frequency. This again would be no surprise since they are somewhat standard courses for the 14th year of a majors curriculum except for Ecology, which probably is found later in the sequence in most institutions. A sprinkling of other courses are found in lesser numbers in institutions throughout North Central, so that generally the major

can in most cases secure the foundation courses normally offered in the 13th and 14th year of a senior college with, in some cases, work usually reserved for the upper division level.

The respondents to the opinionnaire were then asked the following questions. Of those courses found to be in existence in the subject schools of North Central, which should not be taught in the community junior college? Table XXXIIA shows the attitude of the respondents. Only six courses listed of the twenty-two were shown to have been rejected by more than one third of the respondents. Comparative Animal Physiology and Vertebrate Embryology were the two courses that were least well received (54.58% and 54.12% respectively). Histology was rejected by 51.83% of the respondents and Ornithology by 46.33%. Entomology (38.99%) and Evolution (34.86%) were the other two courses which were rejected by at least one third of the population. In Table XXXIIB it is interesting to note that of the six courses described above as least acceptable to the respondents, five were most undesirable to the NSF Institute people and one, Comparative Animal Physiology, was least acceptable to the chairmen (70.37%).

The variance between the opinions of two-year school respondents (Table XXXIIC) and four-year school respondents (XXXIID) is not great, but there are significant points that should be pointed out. The four-year school respondents were somewhat less enthusiastic for Human Anatomy, Human Physiology, and Comparative Anatomy than the two-year school respondents. Ornithology was somewhat less acceptable to the two-year respondents (48.54%) than to the four-year school respondents (38.46%). Histology too, was less acceptable to the four-year (61.54%) than to the two-year (50.29%) respondents.

It should be noted that the presidents were the most consistent group for acceptance of all twenty-two courses listed (Table XXXIIC) showing less than 6% rejection for any one course. None of the four-year respondents rejected the one year General Biology course. Too, although 4.81% of the schools, Table II, offer Nature Study it was rejected by only 11% of the respondents. Of those who were most critical of this course three were chairmen, one was an NSF from a four-year school, and twenty were from the two-year colleges.

Survey courses, in a science particularly, have been thought of as a course for the Liberal Arts major or to meet a general education requirement. It has, with reservations, been considered as adequate for the biology major. Zoology Survey has been combined with a survey of Botany or General Biology to round out the picture in some instances. Is this then a proper method of starting the zoology major on his academic way? In Table XXXIII some 43.57% of the respondents say "no", while only 15.13% give an unqualified "yes". The remaining respondents qualify the "yes" by adding, "if combined with a General Biology Survey Course" (14.22%) or "if combined with a General Botany Survey Course" (22.01%). It appears then that 51.36% feel that a General Zoology Survey course could meet the requirements of the zoology major either alone or when combined with another biology course to complete the year.

The same question arises here for General Zoology as did for General Biology previously. Can more than one course of a single description be justified in a curriculum? More specifically then, can two courses in General Zoology serve a proper purpose or is one course all that is needed? If two courses are offered, what groups would they best serve? Some schools offered two General Zoology courses to serve

two different groups. Always the major is served by one course, but who else would be served with the second course? Table XXXIV shows that 61.92% of the respondents feel two courses in General Zoology cannot be justified. This is most strongly expressed by the chairmen (81.48%). Those served by a second course in General Zoology would be those in general education, according to 12.48%, and pre-medical students with 10.09%. None of these were chairmen of four-year school zoology departments.

There is much discussion about a "core curriculum" in undergraduate biology. Each baccalaureate degree granting institution can devise one of its own without too much worry about problems from outside the institution. Because of the nature and structure of the two-year college the "core" becomes a problem to be dealt with. If a "core" in the life sciences is proposed by one or more senior colleges to which a majority of the zoology majors transfer, what should be done by the two-year college? In Table XXXV the respondents split almost equally on two alternatives. Some 38.99% of the total, and 50.00% of the presidents, indicate the same "core" should be offered. The groups that show least favor to this alternative are the chairmen (33.33%) and members (30.77%) of the schools who potentially would receive the two-year college product. The second alternative was to offer introductory biology, chemistry, physics and mathematics for the 13th and 14th years. Although 40.36% of the respondents favored this alternative, the presidents chose it only 27.77% of the time. The alternative to offer only physical science and mathematics for the core was selected by only two of the respondents.

In Table XXXVI there is a wide range of opinion about how close a two-year college should adhere to the senior college offerings in the life sciences. The greatest response was to the alternative that the two-year college should offer what is needed by its own student population (44.95%). This was stressed particularly by the private schools (57.14%). There was almost an equal division between the other two alternatives. Cooperate with the senior institution, but basically form its own curriculum was selected by 26.60% of the respondents with the private schools least in favor (14.28%). The alternative to adhere closely if not duplicate the senior colleges' curriculums was selected by 25.68% with the four-year colleges being the most numerous group (30.75%) to select this alternative.

Summary

It was the opinion of the respondents that General Biology is a proper introductory course for zoology majors. General Zoology was not considered as the course to be the prerequisite for all subsequent zoology courses. The private schools found this course to be least acceptable, while the public, two-year, schools and presidents found the course more acceptable. Survey courses in General Zoology were generally not acceptable if offered alone. It was most acceptable when combined with a Botany or Biology Survey course.

The general feeling was that the entering freshman zoology major should have an introductory biology course along with chemistry and mathematics. The greatest support here was from two-year and public school respondents. The four-year and private schools advocated more strongly the giving of mathematics and chemistry and no biology.

Most agreed, however, that an introductory biology course should be taught in the 13th or 14th year.

Beyond the introductory course in biology, the respondent generally thought that the listed courses should be taught in the two-year school with the exception of courses such as Comparative Animal Physiology, Vertebrate Embryology, Histology, Ornithology, Entomology, and Evolution. General Biology was rejected by few. Nature Study, although offered by only four of the 83 schools, was generally accepted as a course to be offered by the two-year school. The zoology major should then be afforded a wide array of courses in the typical community junior college, if the desires of the respondents were carried out.

It was the opinion of the respondents that Organic and Inorganic Chemistry be afforded the zoology major, along with mathematics through Calculus and Physics. The four-year and private schools were especially interested in the mathematics requirement. Although some schools surveyed showed two General Zoology courses to serve two groups, the respondents generally felt that they could not be justified. The chairmen were most emphatic on this point. If the two courses were offered, the second course should more nearly be structured for general education purposes than for pre-meds or even extended day students.

The zoology major may be subjected to a core curriculum requirement at the receiving institution. It was the split opinion of the respondents that either the two-year college should give the same core as the four-year college or just give the introductory biology courses and the chemistry and mathematics requirements. It was the general opinion that the two-year school should meet the needs of its students. This was especially evident in the private school responses.

Approximately one-fourth of the respondents thought that the two schools should cooperate on curricular structure, while one-fourth were inclined to adhere strictly to the curriculum of the receiving institution.

Zoology in General Education

The accrediting authority always gives close attention to the general education requirements of an institution. Although there are no specific guidelines to be followed, the authority does state that, "Each institution will be expected to show that it requires a program of general education to enable the student to become acquainted with the major areas of knowledge - the biological sciences, the humanities, the physical sciences and the social sciences. The instructional programs should enable the students to become acquainted with basic ideas in these areas and gain proficiency in dealing with the modes of thought involved in each discipline. An institution should be prepared to give the reasons in support of its particular plan of general education." (34:13) This is not to imply the extent of coverage of the mentioned areas. The authority judges the general education offerings of an institution in light of its total offerings and the philosophical basis under which it purports to operate. This is to say that no two institutions are required to offer the same general education core.

In Table XXXVII the feelings of the respondents are shown concerning the life science requirements, hour-wise, for the liberal arts major to qualify for the Associate of Arts degree. The strongest feelings here were in the area between four and eight hours of biological science. Some 43.57% of the respondents favored eight hours, while 16.51% recommended six hours and 16.05% recommended but four hours of

biological science for the A.A. degree. All other alternatives received 5% or less. The one surprise was that 16.66% of the presidents did not feel that any biological science should be required for the degree. The eight semester hours, recommended most, would correspond closely to the full year introductory course found in a large number of schools. It would also correspond to the single semester courses, found in many schools, that could be combined into an eight hour block (Table VI and VII).

Well over one-third of the respondents (39.44%) believed that the liberal arts student should have his own course in General Biology that would more closely meet his needs than those of the zoology major. The largest majority of respondents, however, thought that the liberal arts student should take a principles course that would be equally sufficient for the zoology major (53.66%). The largest majority of the specialists thought that the course should be separate (62.50%), while the instructors, chairmen and NSF group were strongly for a common course, 54.74%, 59.25% and 60.71% respectively.

For the Associate of Arts degree many of the schools surveyed lumped all of the sciences and mathematics into a single requirement stating that a specific number of hours were needed. Many of these schools offered a combination or sequence of Biological Science Survey and Physical Science Survey to satisfy this requirement. The opinions of the respondents (Table XXXVIII) were almost equally split. Some 55.04% stated that "yes" such a combination would suffice, while 43.11% stated "no". The "no" votes were heavily from four-year and private colleges (56.41% and 51.02% respectively). In opposition, those respondents that thought such a course combination would be suitable were

from the two-year and public colleges with 59.64% and 58.38% respectively for it. The specialists were evenly split between the alternatives.

There was an undefined feeling by the author that liberal arts and general education students were not "welcome" in the advanced zoology courses. Some schools listed courses beyond the introductory courses as "for majors only". Should any course be closed to a student who possesses the prerequisites for the course just because he is not majoring in that area? Dr. Grobstein has stated that from these people come potential biology majors. The respondents in Table XXXIX were emphatic (88.07%) that with the prerequisite(s) the course is open to all. The least enthusiastic members of this group were the presidents (72.22% for and 16.66% against), while the most enthusiastic were the chairmen and instructors (92.59% and 90.51% respectively).

In some catalogs it was stated that a one semester course in zoology was recommended for liberal arts students. Why then was zoology recommended over botany? The question came to the mind of this writer that zoology might be more appropriate because the students were "human animals" and would more closely identify with animals than plants. How does the person in the field see these two courses and their appropriateness for the liberal arts student? Table XL shows that 71.10% of those responding think botany to be equally as appropriate a course as zoology for the liberal arts student. Since zoology was more appropriate for the liberal arts major it was selected by 24.31% of the total, of which 35.89% were chairmen of four-year schools.

When general education needs are discussed, a phase that must be considered is the needs of the terminal student. Many of these students are enrolled in schools where the introductory courses in the life sciences are General Zoology and General Botany. Are these courses the ones that should be offered the terminal student, and if so, for what period of time? In Table XLI there is no clear consensus. Some 46.79% of the respondents say, these are not the courses that the terminal student should be offered. The private college people gave this alternative some 34.69% of their votes. The other side of the question was supported by 44.49% of the respondents, that is, that General Zoology and General Botany be offered one semester each for this group. The private colleges recorded highest for this alternative with 53.06%. One year of either course was supported by few (8.25%) with 15.38% coming from predominantly four-year public colleges.

A problem in any college curriculum is proliferation of courses. Courses are easily added to more nearly meet the needs of a special group although a traditional course in the same area is already in the curriculum. Table V can be used to illustrate this point and show where this question gained its birth. Eleven courses are listed as being for "biology majors only", while pre-professional nursing shows nine courses. Other pre-professional students have one course, teachers and physical education majors six courses, para-medical students six courses, and night school and technical-terminal totaled six. All in all, 39 schools have courses that are for special groups where enrollment is limited. Eleven of these courses are for biology majors only and would tend to be the traditional courses for such a group. We are then speaking of 28 courses that for one reason or another varies from

the traditional courses offered to the biology major. Should these courses truly exist, or should these people take the normal or traditional courses offered at the school. It was the feeling of the respondents, in Table XLII, that the life science oriented student (not biology majors) should not have special courses structured for them where a course already exists (61.46%). As would be presumed at this point, the highest percentage scored on this alternative was from four-year and private schools, with 82.05% and 75.51% scores respectively. The chairmen scored high here as well with 85.18% of the total for that group of respondents. Another significant point here is that the presidents stated 61.11% "no" to 27.77% "yes" for this question. By far the highest percentage for the establishment of the separate courses were the specialists (62.50%), while the total percentage for that alternative was only 35.32%.

The second part of Table XLII asks, if special courses are to be added for limited groups, which ones would be most appropriate? Human Anatomy-Physiology was listed first with 24.31% acceptance, mostly by the two-year and public colleges. Histology was ranked second with 11.00% and Human Anatomy third with 10.09% acceptance. Next in order of acceptance was General Biology 9.17% and Human Physiology 8.71%. In all cases the four-year schools scored consistently low, showing little sympathy for such dual offerings. Only in two cases did the private colleges equal or exceed the score of the public colleges, and that was with the course Human Anatomy and the course Human Physiology.

Summary for General Education

The life science requirements and offerings for the general education core are the point of discussion. It was the thoughts of the respondents that the life science requirement of the general education core should be General Biology of one year's duration. There were still some who advocated a one semester course or a combination of General Zoology-General Botany. Over half of the respondents thought that this General Biology course should be taken with the biology majors, while the remainder thought the courses should be separate.

The use of General Zoology and General Botany to meet the life science requirement was met with greater favor for the terminal student than with the designated liberal arts student. The private schools thought this to be a good solution. It should be added quickly, however, that the use of General Zoology and General Botany for the terminal students was advocated by less than half of the respondents. Some 71% of the respondents, on the other hand, thought that the Zoology-Botany combination would not be appropriate for the liberal arts student. The idea that the liberal arts student should have more human orientation was not accepted by most of the respondents, except by the two-year and public colleges which stayed with the more traditional offerings. An integrated principles approach was thought to more nearly meet the needs of this group.

The use of a survey of the sciences sequence was almost equally split among the respondents. The greatest proportion of advocates of such a combination came from the two-year and public colleges and those not favoring it represented the four-year and private colleges.

There was little doubt, as in the previous chapter, as to the worth of the laboratory in science instruction. Over 85% of the respondents believe it to be an integral part of the instruction.

Special courses for special groups, where a traditional course already exists, was not favored by over 60% of the respondents. These courses were not favored by the four-year and private colleges and the presidents of two-year colleges. The courses that were most likely to be offered for special groups were courses allied with the para-medical and nursing professions, as Human Anatomy, Histology and Human Physiology.

It was generally agreed that a liberal arts or general education student should be allowed free access to any life science course, as long as he meets course prerequisites. The chairmen and instructors were almost in complete agreement with this idea. The presidents were the group that most disagreed with advocating such a policy.

The life science portion of the general education core should occupy only about four to eight semester hours of the average 64 hours necessary for the Associate of Arts degree. The most desired number of hours was eight semester hours, which would most usually give a full year of biological science to the liberal arts student.

The Laboratory

Until now, the one thread which has run true in the analysis of the data has been the general outlook of the respondents towards the laboratory in life science instruction. The consensus has been that the laboratory is generally indispensable in the proper instruction of the student. Three items of the opinionnaire deal with the

laboratory and the student, and vary on only one point. This point of variance is the kind of student involved. If the student is one majoring in liberal arts or general education, should the laboratory requirement be different than if the student is a terminal one, possibly in a vocational or technical area? What if the student is enrolled in the extended day school and is an adult part-time student, is the laboratory requirement different? In all cases the respondents were strongly in favor of the alternative, "an integral part of science teaching regardless of the student being taught." The variance in total responses were slight, but perceptible. The liberal arts and general education student was held to be more in need of the laboratory than the other non-majors (93.11%) overall. Only 3.21% thought the laboratory was not essential. The terminal students were considered greatly in need of laboratory experience with a total of 89.90% of the respondents indicating this to be true. The most perceptible difference between the groups that selected this alternative in Table XXII and Table XLIII was between the presidents (approx. 5.5% less) and the chairmen (approx. 7.5% less). There was even less response to this alternative in Table XXIII. Here 83.48% consider laboratory essential for the adult student, which is some 6.5% less than for the terminal student and approximately 10% less than for the liberal arts student. This difference was mainly because of the lower rating of this alternative for the adult student by the responding chairmen and instructors. The specialists should be pointed out here as being 100% for laboratory regardless of the student.

One course that was observed to be without a laboratory session in many of the schools observed was Genetics. In Table VIII it is shown

that eight schools indicated no laboratory with Genetics, while five schools did not indicate one way or the other. Some six schools did have laboratory offered with the lecture portion of the course, but in two cases the laboratory was optional. The question then presented was concerning laboratory sessions with Genetics. Is laboratory essential for this course? If so, should it be required or should it be optional? In Table XLIV 88.98% of the respondents thought the laboratory session to be necessary, where only 7.33% thought it not necessary. The presidents (16.66%), the two-year colleges (8.18%) and the public schools (8.69%) were most in favor of no laboratory. The optional laboratory was advocated most by the chairmen (33.33%) and the members from four-year schools (30.76%), while the total for the optional laboratory was 25.22%. The concurrent laboratory was thought by 63.76% of the respondents to be essential. This type of laboratory was advocated most by the private colleges (73.46%), the specialists (75.00%) and the NSF institute people (71.42%). Although the four-year school people were as high as the total for the concurrent laboratory (64.10%), the chairmen were the lowest with (59.25%).

It had been assumed previously (Table IX) that one hour of lecture was equal to one semester hour of credit and that the laboratory hours were equal to the credit that remained. With this assumption it was found that a spread of worth for the laboratory hours existed. There were some few schools that did not give credit for their laboratory hours. Six such courses are listed. One hour of credit for each two hours of laboratory was the most common pattern found in the subject schools. The next most common pattern was three hours for one hour credit, and next was four hour laboratory for one hour credit. There

were some cases, although few, in which the credit for some reason would vary, dependent upon the completion or lack of completion of certain course requirements. These patterns existed in the subject schools. What should exist? Table XLV shows that, as in Table IX, the two hour laboratory for one hour credit was most accepted. Some 54.12% of the respondents favored this pattern. This was least accepted by the chairmen (37.03%) and respondents from four-year schools (43.58%). The three hour laboratory for one hour credit was next most popular. Some 25.68% of the total favored this pattern, with the chairmen (48.14%) and the representatives from the four-year schools (41.02%) favoring this pattern most. Placing the laboratory on an equal basis with the lecture hour found less favor than was expected. Only 8.71% of the respondents favored this pattern. Four for one was favored by 7.79% and no respondent was in favor of five for one or six for one. It was strange, too, since it exists, that no respondent favored laboratory hours for no credit.

In Table IX it was noted also that in some schools credit for laboratory hours would vary between semesters of the same course or between separate courses in the zoology department. Thirty-four such courses were recorded. Table XLVI then asked several questions concerning variance of credit for life science courses in the same school. Some 23.39% of the respondents thought that credit for laboratory hours should be the same for both semesters of the same course. A lesser number (12.38%) favored the idea that laboratory credit should be the same for all courses within a department and between laboratory courses (physical or biological) within the school (17.88%). By far the alternative most favored was allowing a variance of credit for laboratory

hours spent in a course (55.50%). This was most heartily accepted by the chairmen (77.77%) and the respondents from four-year schools (76.92%).

Summary on Laboratory

It was generally and heartily agreed that laboratory is an essential element in the teaching of science courses. There was some indication that the necessity of laboratory as a teaching tool and as a learning experience was somewhat decreased the farther away the student got from the liberal arts or general education tradition. It was noted that 93% thought that laboratory was necessary when teaching the potential transfer student. This necessity became somewhat less so (89%) when the student declared himself a terminal student and markedly less (83%) when the student was a part-time student in the extended day school. It was the general expression of the respondents that the Genetics course should be accompanied by a laboratory session and that the laboratory should run concurrently with the lecture. However, some one-fourth of the respondents favored the optional lab.

The general pattern of laboratory hours for one hour credit closely followed those found existing in the schools studied. One hour credit for two hours of laboratory was that most frequently found in the subject schools and the respondents reflected that this should be the proper ratio between laboratory hours and credit. The three hours of laboratory for one hour credit was found next most frequently.

It was accepted by over one-half of the respondents that credit should vary for laboratory between semesters of the same course or between different courses within the department. There was slightly

less than one-fourth who thought the laboratory credit should be the same within the department of life sciences. If two courses are offered by the same name, it was agreed that variance of laboratory content should not be the only variance between the courses.

Time in Zoology Courses

With the press of new concepts and new techniques in the zoological sciences, a factor that becomes of great value to the teacher, student and administrator is the factor of time. That precious commodity of life that if not used wisely and prudently cannot be captured for reuse. With so much to be learned, the time required to adequately do so becomes an important item to consider when planning a course or a curriculum. It is a serious loss when one wastes his own time, but becomes manifestly worse when he wastes the time of others. It is with these thoughts that the author inquired as to the time necessary to complete a prescribed course in the zoology curriculum. There appeared to be a standard practice established in most courses of the schools studied (Table VI), but considerable variance in time required for others. It is interesting to note in this table that the time variance appears only in the four introductory courses of General Biology, General Zoology, General Botany, and Anatomy Physiology. All other courses, usually considered as advanced courses in zoology, were standard at one term in length. The question then became, is the practice found in the subject schools the practice that should be in force?

Table XLVII asks what is an adequate period of time for the listed courses to be properly covered if taken by the biology major. Table XLVIII asks the same question, but is concerned with the non-biology

major. General Biology was found to be offered for both one term and one year equally in the subject schools (Table VI). Some 38.55% of the schools suggested one term, while 44.57% one year. In Table XLVII the biology major was thought to need one year (64.22%) of General Biology, with but 22.93% of the respondents favoring the one semester course. For non-majors (Table XLVIII) the one semester course in General Biology was favored by 30.73% and the one year course by 65.13% of the respondents.

General Zoology and General Botany for the major were almost equally divided between the one and two semester courses. Some 50% thought that one semester was sufficient and slightly over 40% thought that one year was needed to cover these courses. The one semester course in either General Zoology or General Botany for non-majors was favored by over 60% of the respondents, while over one-fourth offered no decision to this question. There was a very great void of opinion as to time requirements for non-majors in all courses presented. In many cases the no-opinions reached near or exceeded 40% of the total respondents. This lack of opinion was not found with the time allocations of the biology major.

Table VI again shows an almost equal showing of time allocation for Human Anatomy-Physiology between the full year course and the one semester course (28.91% and 24.09% respectively). The respondents divided almost equally on the amount of time necessary for the major to properly complete this course. Some 44.49% thought one semester adequate, while 43.11% of the respondents thought one year to be more proper. For the non-major 52.29% of the respondents favored the one-semester course and but 17.88% favored the full year. Again, 29.81%

of the respondents did not give an opinion.

From this point on, no school studied offered a course of greater than one semester's duration (Table VI). Table XLVIII shows that from Human Anatomy on, all courses were considered by the vast majority to require but one semester. In all cases less than 5% of the respondents thought that more than one semester was necessary for the non-biology major. This was true for the biology major as well, but not to as great an extent. The vast majority did think that one semester for these courses was quite sufficient.

All in all it appears that the practices of the colleges of North Central agrees with what the majority of the respondents would desire if given a choice of times as previously shown.

With a rather clear picture of what the respondents consider to be the total time necessary to complete a given course, the next logical question is how should this be divided into lecture hours and laboratory hours during a week. There was no distinction made here between majors and non-majors. The hours of lecture per week for a given course was seldom given in the catalogs reviewed, although the laboratory hours per week were generally indicated. Table XLIX reflects the thinking of the respondents concerning clock hours in both laboratory and lecture for those courses under study. The one point that is most obvious when studying Table XLIX is the point that there is no solid consensus concerning the amount of time necessary for lecture and laboratory in the listed courses. In some cases there is almost an equal disagreement between two blocks of time for lecture. Laboratory times displayed even less agreement on a time allocation than did the lecture. This table also shows that there is either a lack of knowledge on the

part of some respondents, or at least not a solid conviction concerning the hours needed for the courses. After the introductory courses the percentage of respondents giving no opinion increases to near 25% on all courses.

As far as the lecture hours are concerned the most commonly accepted number of hours lecture per course was three hours per week. The notable exceptions to this rule was Ornithology, Histology and Nature Study, for which two hours lecture was in the majority. Entomology and Ecology were almost equally split between the two and three hour lecture period. Five hour and six hour lecture periods were seldom ever chosen and when they were they were chosen by only one or two respondents. Some respondents felt that no lecture time was needed in some courses. Anatomy-Physiology (2.29%), Human Anatomy and Human Physiology (1.83%), Ornithology (2.75%) and Nature Study (4.58%) were those courses most chosen, as not needing a lecture time allotment.

Laboratory time in Table XLIX shows even fewer trends towards a pattern than does the lecture hours. Therefore, each course should be discussed separately.

General Biology, one semester and one year in duration, were seen as approximately the same as far as need for laboratory time is concerned. Four hours was the choice of the majority, while three hour and two hour laboratory periods were chosen in that order. General Zoology and General Botany, either one semester or one year in length, were seen by the majority of the respondents as needing a four hour laboratory. A minority of the respondents felt that a three hour laboratory was necessary for the one semester or full year course. Some thought a six hour laboratory was necessary for the one semester course.

The four hour laboratory was most often chosen for both Anatomy and Physiology courses, while the three hour laboratory was next highest. Otherwise Anatomy-Physiology one term, and Anatomy-Physiology one year, differed from one another in two respects. The one semester course had a six hour lab chosen by 12.38% of the respondents, while only 6.42% so stated for the full year course. On the other hand, 2.29% of the respondents thought that laboratory was not essential for the full year course.

Human Anatomy showed a wide diversity of choices by the respondents. Some 24.77% selected four hours, 19.72% selected two hours, 18.34% selected three hours and 8.71% thought that six hours would be necessary for the laboratory session. Human Physiology showed as wide a diversity as Human Anatomy only with some rearrangement of percentages. Some 27.06% selected four hours, 21.10% selected three hours, 15.59% selected two hours and 6.42% thought that six hours was necessary for laboratory.

The majority of the respondents thought that four hour laboratories were sufficient for Comparative Anatomy, while almost one-fourth of the respondents selected the six hour laboratory.

Invertebrate Zoology, Vertebrate Zoology, Comparative Animal Physiology, and Vertebrate Embryology were seen by the respondents as needing the same time for laboratory. The four hour session was chosen by most, while the three hour laboratory session was the next most selected. There was a sizeable group of respondents who saw a need here for the six hour laboratory.

Genetics was reviewed in a previously presented Table (VIII) and it was strongly agreed that a laboratory session was necessary. Here

(Table XLIX) there is very little agreement as to how much laboratory is necessary. The array was as follows: three hour lab - 22.47%, two hour lab - 21.10%, four hour lab - 20.64%, 0 hour lab - 7.33% and a six hour lab - 5.50%. Some 22.47% gave no opinion on the course.

The remaining courses show little agreement on laboratory times. The four hour lab received the majority of the votes except for Evolution in which the majority (32.11%) thought that no laboratory was needed in this course. The three hour laboratory session was selected next as most desirable, again with Evolution being an exception where the two hour laboratory is specified. There is then an array of selections through the remaining alternatives.

It can be summarized then that there is vast disagreement on the necessary time for laboratory sessions for the listed courses. There is in most cases a majority consensus and a strong second selection. This statement must be qualified by adding that there were some courses where no significant difference in laboratory time was discernable.

The last consideration of time that was asked on the opinionnaire was that of field trips. In this item the sole consideration was not time, for learning value and expenditure were to be considered also. Table L shows the results of this question. The table shows only those people that responded with a "yes" answer, since the "no" answer and no response would have appeared as the same. There is not a course listed that some respondent did not feel should have required field trips. In some cases the number of people with these desires are few (i.e. Vertebrate Embryology - 1.37%). The courses that are normally considered field courses (i.e. Ornithology, Ecology, Entomology and Nature Study) all show a very high percentage (80% or over) of

respondents favoring the required field trips. Vertebrate and Invertebrate Zoology are courses that could well profit from field experience and thus show a high percentage of choice by the respondents. General Zoology and General Botany also show a high percentage of respondents favoring field trips and it is noted that there is less desire for such trips in the one semester courses than in the full year courses. Some 50% of the respondents feel that field experience is necessary in the full year General Biology course and just over 25% feel that a similar experience is necessary in the one term General Biology course.

Summary

The courses as actually structured in the catalogs studied showed that the introductory courses of Biology, Zoology, Botany, and Human Anatomy-Physiology were all one year in length, with no course major distinction being made. The respondents show a distinction. For major or non-major the General Biology course is shown to be one year in length. From then on, in all other courses, the non-major needs but a one semester course. The opinions of the respondents vary on the time necessary for the courses for biology majors. There is an almost equal division between the respondents concerning the time necessary for General Zoology, General Botany and Human Anatomy-Physiology. In all other courses for majors, one semester is the suggested period of time.

One point that should be in this summary is concerning the number of no opinions. The lack of an answer was found to reach 25%+ beyond the introductory courses.

There was little agreement among the respondents concerning the lecture time necessary for each course. There was even less agreement

concerning the length of time for laboratory sessions. Table LI summarizes the majority opinion as reflected in Tables XLVII and XLVIII. This table shows that for the standard lecture laboratory type course, that the 3-4-4 sequence is sufficient. It appears as though the more laboratory oriented courses and the field courses are not given as much lecture time because there is less need, but the laboratory or field time is not increased proportionately. The one course that in the opinion of the respondents did not need a laboratory period was Evolution.

What is not reflected in Table LI is the fact that many (12.25%) of the respondents did advise the six hour laboratory session for the lab and field courses.

The time allocation to field trips was next presented. Some respondents found the field trip necessary in every course listed. However, the introductory biology courses and the typical field courses were those chosen by the majority of respondents as needing the field experience.

Course Credit

It was noticed in the catalogs surveyed that the term "credit", either stated or implied, carried considerable importance in the academic system. To satisfy a degree requirement so much credit must be accumulated by the student with credit applicable to the various areas or disciplines required for the degree. Historically, there have been credits that were acceptable to the four-year school upon transfer and those credits which were not acceptable. There are local credits, terminal credits, and transfer credits. This series of tables then

will help to analyze this term.

In Table VII it was found that there was a great array of credits given for the courses reflected in the catalogs. The introductory courses, plus Human Anatomy and Human Physiology, were generally given four hours credit as reflected in the catalogs and so in Table LI the respondents assigned four hours credit to these same courses. It was equally true for Invertebrate and Vertebrate Zoology, Comparative Animal Physiology and Histology for the catalogs and the respondents showed a desire for the four hours of credit.

Comparative Anatomy shows a divergence between that desired and that practiced. Well over one-half of these courses in the catalogs offered five hours credit. A majority of the respondents, on the other hand, stated that four hours credit for Comparative Anatomy was sufficient.

Vertebrate Embryology was given a credit weight of four hours by the respondents, while in the eight schools offering the course credit was almost equally divided between three hours (3 schools), four hours (3 schools) and five hours (2 schools).

Genetics, Entomology and Ecology were found to usually be offered as three hour courses. The majority of respondents assigned them a weight of four hours each. Ornithology, in but two schools, was found to be worth two hours credit in one school and three hours credit in the other. The respondents assigned this as a four hour course.

Histology was found to be a four hour course in most schools studied and this was the credit assigned by most of the respondents. Nature Study was found in but four schools and was assigned credit ranging from two to three and four hours. The respondents believed

that three hours credit would be sufficient.

Evolution was found in two credit categories in the catalogs. Either it was a two hour course (the most usual) or the credit would vary in weight. The respondents thought that this should be a three hour course.

It should be pointed out here that every course mentioned had some respondents who thought the credit should be variable. Those courses showing the greatest number of respondents choosing the variable credit were General Biology One Year, General Zoology One Year, General Botany One Year, Anatomy-Physiology One Year and Nature Study.

With eight hours of life science recommended as a minimum for the A.A. degree the next logical question would be how many hours of biological science credit should a community junior college offer as a minimum? Table LII shows a wide variation in opinions. It is somewhat surprising to note that the minimum number of hours most often suggested (31.65%) was eight hours. This would equal the minimum number of hours of biological science recommended for the A.A. degree. The next most popular recommendation is 16 hours (21.10%) and the next is twelve hours (16.51%). It is interesting to note that the greater the number of hours recommended, the less interest shown by the presidents. One president did recommend over forty hours of biological science as a minimum, which probably would be rare. It should be noted also that there were more chairmen of four-year schools in favor of a minimum of 16 hours biological science in the community junior college than there were those interested in eight hours. With four hours credit per course as the recommended weight, this would mean some four courses to be offered on the 13th and 14th year level. Eight hours,

the minimum recommended most, would be but two courses or one year of introductory biological science courses.

What of the terminal student? When all of his technical courses are required then how much general education time remains and how much of that time should be required in the biological sciences? If not in vocational or technical curricula, then how should the requirement in biological science vary between Secretarial Science and Terminal Liberal Arts? These questions in the form of one were asked of the respondents and they replied as only they could under the circumstances (Table LIII). Some 42.66% responded that the requirement should vary according to the curriculum of the individual student. Four (26.60%) or five (14.67%) hours were suggested most if the hours were to be definitely specified. This would probably be a one semester course of this hourly weight.

The problems of articulation are usually not fought out in the life science departments, but in the Office of the Registrar. However, some weight would have to be attributed to the life science department in the decisions made by the respective registrars. It then was asked, if a community junior college is accredited by a regional accrediting authority should the credits for biological science courses be accepted by the four-year school to which the student transfers the credits? (Table LIV) Some 94.03% of the respondents stated "yes". However, 79.81% of these "yes" answers were then qualified by adding "if college level courses." This phrase could lead to a discussion on semantics and may in some cases. Fewer four-year people, percentage-wise, selected this qualifying phrase than the presidents or instructors of two-year schools. It should be noted, however, that by far the largest

percentage of unqualified "no" answers came from chairmen of four-year schools.

It was noticed in some catalogs that courses of various titles were offered which would impose independent study or "research" on the student. Some courses were called "Selected Readings in the Life Sciences," or "Student Projects" or "Student Research". If these courses are offered by a community junior college should this be for transfer credit? (Table LV) Some 75% of the specialists state that "yes" they should be offered and should transfer. Only a total of 32.11%, however, state that such courses should indeed transfer. The majority (61.46%) states an emphatic "no"! No one group of respondents led all others in rejecting such courses.

Since so few colleges offer a course entitled or described as Nature Study the author wondered how this course should be treated credit-wise. There were comments returned with the opinionnaire that praised this course as the course that should be "required of every elementary education major," to "no! be collegiate." With these two extremes expressed let us now look at how the total group responded to this course called Nature Study. Table LVI shows that there is no great degree of agreement on how this course should be handled. Only 29.35% of the respondents considered it sufficient for transfer credit with the four-year people least in favor of this suggestion (23.07%). It was interesting to note that the presidents and specialists (50.00%) favored this manner of treating Nature Study as did private schools (30.61%). The largest percentage (37.15%) desired to consider this course only a community service. The remainder of the respondents (22.93%) considered the course worthy of at least local graduation credit.

Another question considered by the respondents concerned the use of open circuit television to teach introductory courses. The use of this medium is becoming more wide spread in the community junior college so that the question is of significance. Only 10.55% of the respondents gave an unqualified "yes" answer. No one group stood out as favoring the use of this medium more than any other group, although the private schools were by far least in favor (4.08%). Only 3.21% of the respondents gave an unqualified "no". The point that was accepted as a qualification was that of laboratory. The respondents who had reservations about introductory biology courses offered via T.V. thought that it would be more acceptable if a laboratory session were required and accompanied the course (70.18%). Some 11.92% of the respondents did not think the laboratory would help. (Table LVII)

Several catalogs reflected that high school students, usually of exceptional ability, were allowed to enroll in courses at the community junior college before graduation from high school. The question posed in Table LVIII is what courses would the respondents allow these students to take. General Biology was designated by 71.10% of the respondents as an appropriate course for this group. General Botany and General Zoology were accepted by slightly over half of the respondents (55.50% and 56.88% respectively). Slightly over one quarter of the respondents would allow this high school honor student to enroll in Anatomy-Physiology (29.81%). Comparative Anatomy and Invertebrate Zoology were selected by 19.72% and 19.26% respectively. Other courses were designated by the respondents such as Human Physiology, Human Anatomy, Ornithology and Nature Study. Only 5.50% of all the respondents would not allow the high school honor student to enroll in

college courses for credit. The largest percentages to give the "no" answer were the four-year people (10.25%) and the private schools (8.16%).

Summary for Course Credit

Course credit was found to vary considerably from school to school as reflected in the catalogs. There was consensus, however, that all 22 courses reflected in the opinionnaire and in this chapter should have a weight of four credit hours, except Evolution and Nature Study which were set at three hours credit. There was little real harmony on any one course described. Wide variations were found in some while other courses show more uniformity of thought as to its credit weight. Many respondents favored a variation in credit during the same course. The greatest desire for variation of credit occurred in those courses that run for two semesters, such as General Biology, General Zoology, General Botany and Anatomy-Physiology.

The catalogs showed a wide range of Associate of Arts degree requirements. They varied from no mention of science requirement at all, a science or mathematics requirement, laboratory science requirement, to a biological science requirement for the degree. It was the general opinion of the respondents that eight hours of biological science should be required for this degree. This requirement then matched what was suggested as the minimum number of hours of biology that a two-year college should offer. A substantial number of respondents went as high as 16 credit hours of life science offerings by an institution of this type. This would give a full year of biological science at four hours per semester which would be the introductory

biology, zoology or botany courses. Sixteen hours would give two full years of biology or zoology-botany combination courses which would more nearly serve the major or pre- and para-medical curricula. Terminal students were not given a rigid biological science requirement for their degree but the respondents generally indicated that each terminal curriculum should have this requirement determined separately. Those who did set an arbitrary requirement set it at 4-5 hours total.

It was almost overwhelmingly agreed that a transfer from an accredited two-year school should have all of his credits accepted. Some 70% of these did want to qualify their "yes" answer with "if a college level course."

Courses were found that were designed for the advanced and creative students, whose interest was in the biological sciences. These were courses designated as "Research", "Student Projects", and "Selected Readings." Most did not see these courses as transfer courses except for the specialists who heartily endorsed such a program (75%).

Nature Study appears to be a course on which there is little agreement. A little over one-third favor it to be a community service course, while just under one-fourth consider it sufficient for local graduation credit. Some 29%, heavily presidents, instructors and private school people, saw this course as a course of transfer credit.

Introductory life science courses by T.V. were not well received. Some three-fourths of the respondents said that it would be more acceptable to them if a laboratory session accompanied the T.V. presentations.

The introductory courses in the life sciences were generally considered open to the advanced or outstanding high school seniors. The more advanced courses were not recommended by many respondents.

One interesting outcome of two questions asked was the general incongruity concerning credit for laboratory hours. When asked directly how many hours of laboratory should equal one hour credit, the general agreement was two hours. However, when the respondents were asked to designate lecture, laboratory and credit hours for each listed course they indicated that one hour credit should be given for each four hours of laboratory taken.

Course Prerequisites

It would appear as logical that when a course is offered first to a student it should lay some foundation on which the next course would naturally build. It would then appear reasonable that through the educative process, in some cases a series of courses would be necessary in order that a student might profit maximally from a more advanced course. To what degree is this foundation building a necessity for the courses found on the 13th and 14th year level? Or, as it appears, how few courses are necessary as prerequisites for the listed courses?

Table LIX gives a breakdown of the courses that were recommended as prerequisites for the courses found in the colleges of North Central. This table will be discussed first. General Biology of one or two semesters duration was not encumbered by prerequisites. The only prerequisite mentioned was that of High School Chemistry and Biology (12.38% to 17.88% being the range). General Zoology, one semester and one year, showed a little increase in prerequisites over General Biology. A slight increase in high school science requirements is noticed. A few, 27.05% and 24.30%, would require some type of General Biology course prior to the General Zoology course(s). There is no

great demand for chemistry outside of that mentioned on the high school level. General Botany, one semester and one year, are almost identical to that of General Zoology as far as prerequisites are concerned.

Human Anatomy-Physiology, one and two semesters, shows an increase in prerequisites of the introductory nature. The requirement of a biology course of some type was chosen by 50.45% of the respondents for the full year course in Anatomy-Physiology. The requiring of some General Zoology course was selected by 16-18% of the respondents, depending upon its duration. Inorganic Chemistry ranged from 17% to 20% and Organic Chemistry from 9% to 12%. The requirement of high school science courses remained at the 11% to 20% level depending upon the length of the Anatomy-Physiology course.

Human Anatomy shows a recommendation from the respondents for General Biology (47.69%) or General Zoology (41.73%) and a decrease of high school science prerequisites to a 7%-8% level.

Human Physiology shows the same general recommended prerequisites as Human Anatomy-Physiology, except that it is indicated that more chemistry is needed, including Biochemistry.

Comparative Anatomy does not show much of a variation in recommended prerequisites from Human Anatomy, except that a larger percent of the respondents recommend a General Zoology course (69.71%) or General Biology course (53.66%) prior to enrollment in the Comparative Anatomy course.

Invertebrate and Vertebrate Zoology courses show a recommendation for introductory courses (General Zoology 49.99% or General Biology 62.37%) and that is about all. The recommendation for high school science courses as prerequisites has dropped to 5%-7% of the respondents.

Comparative Animal Physiology is recommended to have the introductory zoology or biology prerequisite, but differs from some of the others in having a heavier recommendation for chemistry. Inorganic Chemistry (33.48%), Organic Chemistry (34.86%) and Biochemistry (14.22%) were strongly recommended for the Comparative Physiology and was greater than for any other course listed.

The recommended prerequisites for Vertebrate Embryology were more strongly General Biology, one year (33.02%) or General Zoology 32% to 33% with Inorganic and Organic Chemistry; recommended by several (11.46% and 11.92% respectively).

The recommendation on Genetics prerequisites differed in several ways from those suggested for the other courses. General Biology, one year, was recommended most (40.36%). For the first time a General Botany course of some type was recommended (16.51%). Inorganic Chemistry (13.30%), Organic Chemistry (11.92%) and Biochemistry (5.96%) were suggested. This was the first course in which Finite Mathematics (10.55%) and Calculus (5.50%) were suggested to any significant degree.

Ornithology and Entomology showed no significant requirement outside of General Biology or General Zoology.

The prerequisites for Histology was more heavily in Chemistry than most, with the introductory life science courses recommended by the usual number of respondents.

Ecology and Evolution are very much alike in the prerequisites recommended by the respondents. Biology of some type is recommended 53.65% of the time, while General Zoology of some type is recommended, 50.45% and 41.73% respectively. Botany is recommended 31.19% of the time for Ecology and 23.38% of the time for Evolution. Chemistry was

considered more significant for the Ecology course (18.33%) than for the Evolution course (15.58%) with Biochemistry more significant for the latter.

Nature Study showed very little in the way of recommended prerequisites.

It is interesting to note that General Physics was only mentioned to a degree that could be considered significant in the two physiology courses. In Human Physiology 4.12% recommended General Physics, and for Comparative Animal Physiology, 4.58% of the respondents saw it as a requirement.

Table X shows that there are few stated prerequisites in the catalogs of the subject schools. General Biology is a requirement of every course but Ornithology and Nature Study. General Zoology of some type is a general prerequisite in some schools, but is not as widely used as General Biology. Botany was a prerequisite in only four courses, these being Human Anatomy-Physiology, Genetics, Entomology and Ecology. Chemistry was recommended in but three courses: Human Anatomy-Physiology, Human Physiology and Comparative Anatomy.

Sophomore standing was used as a prerequisite particularly in Genetics but also in Comparative Anatomy and one course in General Botany.

A prerequisite can be viewed from several points of view. It can serve as a guide to show what preparation should precede the taking of a course. It can, in some cases, be a hard and fast rule that keeps out those people who have not satisfied the requirement. The respondents, (Table LX) 57.79% of them, viewed the prerequisite as a suggestion. Some 37.15% of the respondents viewed the prerequisite as

both a suggestion for preparation, and when necessary, a barrier as well. Only 4.58% saw the prerequisite as a mechanism to bar the unprepared from entering a designated course.

Table LXI shows an incongruity of thought and philosophy when compared with the results of Table LX. As previously stated, the respondents thought of prerequisites as "suggestions of preparation necessary to gain optimally from the course." In Table LXI the respondents seem to reverse their position by saying that a community junior college is justified in limiting its enrollment in life science classes by prerequisites (54.58%). To be fair with the respondents, they were given no alternative that approached the "suggestion of preparation" philosophy. Still it seems inconsistent to support these two opposite statements to the same general degree. A combination of methods of limiting enrollments was next most suggested (34.86%). The use of a minimum score on a national achievement examination was selected by only 14.22% of the respondents.

It was noted that some schools did not list any course prerequisites in their catalogs. The question raised was, do they not use prerequisites or are these restrictions and suggestions a part of the advisement process only? Should these prerequisites, requirements or restrictions be reflected in the catalogs? (Table LXII) Yes, was the unqualified answer of 94.03% of the respondents.

As explained previously, the respondents thought that any course a non-biology major desired to take would be acceptable as long as the requirements for entry into the course were met (Table XXXIX).

General Zoology, one year in duration, has been the standard introductory course for zoology majors in the recent past. What

prerequisites should this course have placed upon it? An array of answers were chosen and none with more than one-third of the respondents choosing it. High School Biology was the most selected (33.02%), while "no prerequisite needed" was next with 30.27% responding. High School Chemistry, college level General Biology and minimum scores on a national achievement examination all received one-fourth of the responses of the respondents or less. When asked if General Zoology should be the prerequisite for all other zoology courses to follow, the respondents answered 57.93% "no" and 39.44% "yes." (Table XXIX)

Some respondents indicated, and then emphatically stated, that prerequisites were not necessary on most of these courses. One respondent stated that if students want to take these courses, let them ! There was the other extreme where every course had a prerequisite. One respondent indicated that for General Zoology a student should have completed mathematics through Calculus, Chemistry through Organic, General Physics, an introductory General Biology course, as well as have completed chemistry and biology in high school. This respondent was not from an institution noted for producing the research biologist. He represents a two-year, public, state-supported institution in the upper mid-west.

Summary of Course Prerequisites

Two tables studied agreed that few, if any, prerequisites are necessary for General Biology. General Zoology was treated similarly except that some one-third did agree that high school science would be most useful. General Zoology was not generally considered as the foundation course for all zoology courses that follow. In most catalogs

the most used prerequisite for the other courses was General Biology, although General Zoology was widely used. The respondents generally accepted General Biology more as a prerequisite than General Zoology, so that practice and desire tend to agree.

Human Anatomy-Physiology, Human Physiology, Comparative Animal Physiology, Vertebrate Embryology, and Histology all had similar prerequisites as seen by the respondents. The introductory course of General Biology or General Zoology were mentioned along with varying combinations of Inorganic, Organic and Biochemistry. The one year course in Anatomy-Physiology had heavier prerequisite demands than the one semester course, particularly in Chemistry. Human Physiology had an even heavier respondent demand for a chemistry prerequisite than the combination Anatomy-Physiology. Comparative Animal Physiology showed an even stronger demand for the chemistry prerequisites. The catalogs showed only three courses where chemistry was a prerequisite and these were physiology courses.

The three courses Genetics, Ecology and Evolution have much the same call for prerequisites as the courses mentioned above, but with some variance. The introductory courses were still called for and by approximately the same percentage of the respondents. Genetics, however, had a relatively high call for Botany as a prerequisite. Its other uniqueness was that mathematics was seen by more respondents as a necessity for this course than any other. Even here the call for mathematics was weak. Ecology and Evolution had the usual demand for an introductory course, and as expected, a call for chemistry of various types for an additional prerequisite. Ecology had more total respondents wanting chemistry as a prerequisite, but Evolution had more

that would demand Biochemistry than did Ecology.

Other courses such as Human Anatomy, Comparative Anatomy, Invertebrate Zoology, Vertebrate Zoology, Ornithology and Entomology were shown to need introductory courses. There were some differences of opinion on these courses. Invertebrate and Vertebrate Zoology were shown to need General Biology as a prerequisite, although General Zoology was indicated only slightly lower percentage-wise.

High school science was most recommended as the prerequisite for the introductory courses of General Zoology and General Botany. Some respondents did indicate that each should be preceded by a General Biology course. Nature Study was generally considered a basic course and needed no prerequisites.

It should be noted that although the CUEBS conferences recommended General Physics and a mathematics program as necessary for the biology major, the respondents to this opinionnaire did not find a general place for either course as prerequisites in the 13th and 14th year life science program.

There was some incongruity between responses to two questions asked the respondents. The respondents agreed on one question that the prerequisite was a "suggestion", as to the background desired for a course. In another question they strongly indicated that the prerequisite could be used to limit enrollment in a course. Most did agree that a prerequisite should be stated in the catalog course description if required, and if a non-major has these prerequisites he should be allowed to enter any course he desires. There was a surprising number who would limit courses beyond the introductory ones to zoology majors.

It should be stated as a general conclusion that not many prerequisites were indicated as necessary for any courses mentioned. The greatest percentage of respondents to agree on a prerequisite for any one course was 40.36% who agreed that a one-year General Biology course was necessary before taking Genetics.

Core Curriculum

Many articles have been written in the last few years concerning the "core curriculum" in the life sciences. As has been previously mentioned, the American Institute of Biological Scientists, through the Commission for Undergraduate Education in the Biological Sciences (CUEBS), has been giving core curricula considerable study and publicity. As an educator in a community junior college, the author was concerned as to the impact of such a program(s) on the two-year schools.

If a senior college, to which a majority of the two-year school majors transfer, develops a core curriculum, how would it affect the two-year school? There was a clear split of opinion. (Table LXIV) Some 42.66% of the respondents, but only 30.77% of the four-year school people, felt that this would force the two-year school to alter its curriculum. Only 29.62% of the chairmen thought that such a change would be necessary. On the other side of the question, 40.36% thought that no revision of the curriculum would be necessary.

When the same question was asked, but with differing alternatives, there was again a split opinion. (Table XXXV) Some 38.99% of the respondents thought that the two-year school would of necessity offer the same core. This was most strongly believed by the presidents and instructors. The second alternative most selected was to offer only the

introductory biology, chemistry, physics and mathematics courses of the 13th and 14th years. Some 40.36% of the respondents selected this alternative. A high percentage (19.72%) of the respondents had no answer for this question. The no answer for Table LXIV was also high (14.22%).

With the split opinions on both questions just covered, and with such high returns with no answers, the question becomes one of whether or not the questions had previously been answered, or even asked, by the respondents? Table LXV then asked if the CUEBS Core Curricula was known to the respondents? The answer was 70.64% "yes" and 26.60% "no". The four-year people were more aware of this program than the two-year people.

Have the respondents considered initiating a core curriculum in their respective schools? (Table XLVI) The four-year school again led the two-year schools in this area. Some 82.05% of the four-year schools had considered such a move, while 47.95% of the two-year schools had done so.

For those who had considered the core curriculum, was the stimulus from within their own school or was it from an outside source? (Table XLVII) Some 70.64% stated they had not been approached about starting the core program. Of these who had been approached, 11.92% were from within their own department, 5.04% from a four-year institution, and but 1.83% from some other agency.

Summary of Core Curriculum

It would appear that the two-year schools are behind the senior colleges in awareness of and expressed interest in a core curriculum.

Some 82% of the senior institutions canvassed have considered or are considering a core curriculum, while half that number of two-year schools are doing so. The CUEBS Core Curricula was most known to the senior college respondents. There was some divergence of opinions concerning the core and how it would affect the two-year school. Approximately one-half of the respondents feel that if the senior institutions have a core, the two-year college(s) will of necessity follow suit and alter its present curriculum to match that of the senior college. The respondents were generally not approached by any group to initiate a core curriculum. Those who were, were approached from within their own institutions.

The Terminal Student

The terminal student is many things to many people. Whatever the original meaning of the term it has been lost in many interpretations. The general implication of the term is: that student who does not desire the baccalaureate degree or is enrolled in a curriculum that will terminate short of the degree. This term is generally associated with vocational and technical programs or in some cases with a two-year liberal arts program. In any event, the term connotes an abbreviated collegiate career.

There is historical and documented proof that the vocational and technical student, possibly engendered by his advisor, does not care to add to his curriculum those general education subjects from the general area of the student's interest. This of course would not be as true for the liberal arts student.

If a life science requirement is to be included in the curriculum of a terminal student should it be so structured as to be offered only to this group of students? The general consensus (Table LXVIII) was that such a course should be structured for this group. When this question was asked in a slightly different way (Table LXIX) the answer was basically the same. Some 66.05% of the respondents stated that the student should "take a life science course structured for the terminal student." The remainder (26.60%) thought that the terminal student should take "the course(s) he desired as long as he has the prerequisites."

Should the standard courses of General Botany and General Zoology be offered to this group of students? In some schools studied, the two courses, one semester each, are combined to give a form of biology background. The respondents were split in their opinion. Some 46.79% of the respondents thought these courses should not be offered. The private school people were not in as much agreement (34.69%) as the other groups. Some 44.49% of the respondents thought that this combination should be offered. The four-year school respondents were least for this suggestion (35.89%) and the private schools were most in support (53.06%).

Summary on the Terminal Student

The general consensus of the respondents was that the terminal students should have life science courses structured for them alone. Some one-quarter of the respondents thought the terminal student should take any life science course as long as he can meet the prerequisites. The general indication is that the number of hours required should vary

with the student's program. One year of General Biology is heavily recommended, as was a combination of biological and physical science survey. General Botany and General Zoology were acceptable to one-half of the respondents. The laboratory was essential always.

The Adult Student

The adult student is often considered a breed of student unto himself. It is true that all types of adult students enroll with all types of motives, but this could be said with equal truth about the "regular" student.

What life science courses should this group be offered? The respondents in Table LXX thought that they should be offered any biology courses in the regular curriculum, as long as there was a demand (83.48%). Another 11.46% answered basically the same, but did not qualify the answer.

If General Biology is to be offered for the adult student, what type course should it be? Some 58.25% stated that it should be the regularly offered course. On the other hand, 35.32% stated that the General Biology course could be either the regular one or one of a less academic nature offered for local credit. The private school people generally think that General Biology is General Biology, regardless of the student.

Summary of the Adult Student

The respondents to this opinionnaire generally did not consider the adult student as different from any others enrolled at the college. They should generally take any biology course they are qualified to

take and the laboratory would be essential. A sizeable segment of the respondents did feel that there was a place for the biology course that was not as academically demanding as the regular course and should carry only "local credit."

Miscellaneous Questions

It was found in one institution that a course of an advanced nature was offered in the summer only. This too was a course that did not necessarily need to be offered in a time of the year when the flora and fauna were right for study such as might be desired for an Ecology course. The one course was Vertebrate Embryology. The question posed was, should some advanced courses be offered only in the summer school session? The general feeling of the respondents in Table LXXI was "no" (69.72%). Some 24.31% thought there was some merit in such an offering.

Human Anatomy and Human Physiology are found as separate courses and as a combination course throughout the schools of the North Central Association. What would the respondent prefer? Some 74.77% of the respondents in Table LXXII thought the unified Human Anatomy-Physiology course was most appropriate. Only 16.97% thought the subjects should be taught as separate courses.

CHAPTER V

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

This study was undertaken as an exploratory one to see if it could be determined what the practitioner in the field of biological science and biological science teaching feels should be taught in the community junior colleges of North Central Association. It was then hoped that some of these opinions on what should be practiced could be compared to what is being practiced in these schools.

Eleven areas of concern were isolated from the opinionnaire answers. Each of these areas of concern will be treated separately in this chapter. Other observations will be noted and discussed that do not directly deal with the eleven outlined areas.

Conclusions and Implications

General Biology

In theory and in practice there are four groups of students exposed to the biological sciences in the community junior colleges. The biology major and the liberal arts major are students typical of almost any college. The students that are somewhat difficult to classify and provide for are the terminal and extended day students, for they are not necessarily exclusive of any other group. Regardless of the student's classification it is apparent that General Biology is the proper introductory course for all groups. Although most schools studied offer

General Zoology and General Botany one semester each, they were considered inappropriate for most students as introductory life science courses. General Biology as an integrated principles course was generally considered more appropriate. There should be other provisions made, however, for some members of the extended day school and some terminal students. These students should be offered a choice of the above course, or a General Biology one semester, or a survey of Biological and Physical science, one semester each. Dual offerings of a single course are considered to be generally inappropriate, as for example the offering of two General Biology courses. If such dual offerings are available they should differ only in where the instructor, in lecture and laboratory, places the emphasis.

If an institution offers General Biology and General Zoology or General Botany there is a clear delineation in the order of presentation. General Biology is a foundation course from which General Zoology or General Botany can build and would be considered most appropriate if offered to the student first. If General Biology is taken after General Zoology or General Botany the credit for the course should be altered or withheld. General Biology was considered the appropriate prerequisite for many other courses that would follow it in sequence.

It appears from the data collected that General Biology will find increased use in the two-year schools. Accelerated high school biology programs have not made sufficient impact to warrant the elimination of any of the introductory life science courses. The extremely wide scope of General Biology would allow for upgrading and expanding the course regardless of the average high school background of students entering the course as freshmen. It also seems that there will continue to be

duplicate general biology offerings particularly in the public two-year schools and particularly those that offer terminal and/or extended day programs.

General Biology will be offered to all students and they will take it together regardless of the students' expressed goals. This will be resisted by many instructors because of their training, interest, and teaching competence in one area, Zoology or Botany, and not in both. But, for many reasons, the General Biology course will prove to be the most acceptable route for the two-year college to follow.

The Zoology Major

The zoology major should establish a good foundation the first two years in the community junior college. As a freshman, he should take the introductory biology and chemistry and whatever mathematics is applicable. In the sophomore year he should take Organic Chemistry, mathematics through Calculus and General Physics.

A survey course in General Zoology is generally considered inappropriate for the zoology major. The survey course would be more acceptable if it were combined with another course such as Botany Survey or General Biology.

The respondents are stating what should be required of the zoology major. This is no more than could be expected of a zoology major. Selective private two-year schools could, and some do, require the zoology major to follow such a curriculum. It will be difficult for many of the public two-year colleges, and many of the private ones, to get a student who is not deficient in mathematics and possibly chemistry. This heavy schedule in the freshman and sophomore year would be unrealistic

for a number of students who will attend the community junior colleges. This would be a good curriculum model for the college to use in advisement but would need to be revised for many individual students.

Of the twenty-two courses found to exist in the two-year schools, six were suggested as not being appropriate. The courses not recommended were Comparative Animal Physiology, Vertebrate Embryology, Histology, Ornithology, Entomology and Evolution. Any of the courses that remain would be legitimate and acceptable courses for the sophomore zoology major to include in his curriculum. The average community junior college in the North Central Association does not even approach the variety of courses described in the opinionnaire as being present in the colleges studied. The twenty-two courses listed are a composite of courses from all the schools studied. The average two-year school will continue to offer the basic introductory life science courses as the core of the life science curriculum. Courses other than the introductory ones will be added as a demand arises, probably in specialized areas such as nursing, laboratory technology, x-ray technology, etc. This, too, will be confined to the community colleges of the more urban centered schools. The courses such as Histology, Human Anatomy, Genetics, and Vertebrate Embryology are now found in such colleges as the Chicago City Junior College system, Kansas City Junior College, Phoenix Junior College system, etc. These are centers where auxiliary facilities are also present to furnish needed practical experience.

Some courses beyond the introductory ones, and even courses that would be outside the normal 13th and 14th year sequence, will continue to be found in the two-year college curriculum because of the special interest and/or training of an instructor. They too have met with success

in transferring the credit to a senior institution. In most schools the zoology major will receive the basic and fundamental background in introductory physical and life sciences, to include mathematics. He will also receive a good share of the general education courses that his degree would demand. Life science courses outside of the usual sequences will be found where special curricula demand it. Schools with paramedical curricula will include Histology and Human Anatomy. Schools having terminal agriculture curricula may include Entomology as a regular course. The demands of the constituency will dictate what courses will be offered.

General Education

The Associate of Arts degree should have a life science requirement, and it should be one year in duration. The course, probably General Biology, should be a comprehensive principles course which is taken along with the biology major. The science requirement for the degree could be satisfied by a combination of physical science and biological science survey courses. Whatever the courses, they should have laboratory sessions. The liberal arts or general education student should not be discouraged from taking life science courses beyond the introductory ones. Botany should be recommended, as well as zoology, to satisfy this student's requirement. If this student wishes to enter other life science courses of an advanced nature and possesses the prerequisites, he should be encouraged to do so. A combination of General Zoology and General Botany could be offered to satisfy the general education requirement, but this was not recommended any more than was General Biology.

It is most probable that the colleges surveyed will not require a full year of biology for the A.A. degree. Such a course would be acceptable but at most the requirement will be for a laboratory science, physical or biological.

General Zoology and General Botany, alone or in combination, will continue to be courses offered to meet the life science requirement of the liberal arts or general education student. General Biology will increase in popularity, however. Terminal curricula, particularly in the trade and vocational areas, will continue to be primarily without or at most will have a limited life science requirement.

Laboratory

The area of most consistent agreement is the need for laboratory instruction in the life sciences for all students. However, the terminal and extended day students were not considered as much in need of this type of instruction as the liberal arts or life science major.

The two hour laboratory, for one hour credit, is most commonly found in the schools studied and was most often selected by the respondents as being the length of laboratory that should receive one hour credit. However, when asked the length of laboratory work per week most desired for each course, the four hour laboratory was the one most generally selected. This would appear to be saying that four hours of laboratory per week is needed in most cases but without giving extra credit for the time. Apparently the instructors feel a need for more time to introduce new and necessary laboratory exercises or laboratory time is needed to cover an increased quantity of theory materials as well as laboratory exercises.

The credit for laboratory should be allowed to vary from course to course within a department and even between two semesters of the same course. Laboratory exercises are much more time-consuming in some courses (Comparative Anatomy or Histology), than in others (General Biology). The credit weight will need to vary between differing courses or portions of courses.

Laboratory in Genetics is as essential as in any other life science subject and should be taught concurrently with the theory portion of the course.

Time in Courses

The length of the course and the course content appear to be the deciding factors as to the amount of laboratory time needed each week. However, there is no overwhelming agreement concerning the laboratory time needed for each course. If bare majorities are used, the four hours of laboratory per week was most suggested in all courses except Genetics and Evolution. Genetics was most heavily a three hour laboratory and in Evolution "no laboratory" was most often selected, with three hours the next most selected laboratory time. The exceptions to the three hour laboratory occurred in Human Anatomy, Genetics, and Evolution which were designated a two hour laboratory and Histology and Comparative Anatomy which reflected a choice of the six hour laboratory.

The time needed for lecture sessions in the designated courses was equally as uncertain as that of the laboratory. If bare majorities are taken, again the three hour lecture was most often chosen with two hours being the next choice. The exceptions here are Ornithology, Entomology, Histology, Ecology, and Nature Study. These courses had a two hour

lecture proposed first and the three hour lecture selected next.

Both in the case of the lecture hours and laboratory hours there were many who did not answer. The percentage of "no response" ran quite high, averaging near the one quarter mark overall.

Scheduling of time for lectures and laboratories appears to be guided by both administrative necessity and by the need for time in the course. The total curriculum must work together in harmony as much as possible, with as few conflicts as possible. It would appear that a three hour lecture and a four hour laboratory session for a course would schedule easily. A lecture hour on Monday, Wednesday, and Friday would give time in between sessions for study and preparation. The two hour laboratory on Tuesday and Thursday would spread the laboratory time to make it less tiring to the student and more easily scheduled.

From all of the various combinations of lecture and laboratory times shown it would appear that many instructors would prefer to utilize the time necessary to teach the course as he sees fit. By this is meant that some instructors are more or less laboratory oriented while others feel less need for laboratory and more need for lecture time. The individual difference of the instructor and how he perceives the course could account for the time variance. The course content and the most efficient way to present it would also dictate the time needed. Ornithology, Entomology, Ecology, and Nature Study were shown as needing less lecture time than the other courses. These are, or should be, basically field courses and thus a minimum of time in lecture and a maximum of laboratory time in the field. Histology is primarily a laboratory course with a minimum of lecture necessary.

Times will continue to be selected on the basis of administrative scheduling needs, the needs as dictated by proven pedagogical procedure, and the way the instructor perceives the course and its content. It appears that the instructors are asking for more time in the courses studied.

There are many who are not familiar with what time a course would require. It could not be determined if this was the cause of the high 'no response' answers to these items. To many these items probably appeared forbidding, for many left it all blank. It seems they should have had some idea concerning time requirements of at least one of the courses.

The length of the courses was determined by two factors, these being the student involved and the level of the course. The introductory courses to the zoology major were to be one year in length. All others were suggested to be one semester in duration. This again was generally a bare majority for the introductory courses other than General Biology which was definitely one year. General Zoology, General Botany and Anatomy-Physiology were almost equally split between one year and one semester where the zoology major was concerned.

Where the non-major is concerned, General Biology is the only course that is indicated as needing one year and all others are decidedly one semester. The glaring item concerning the non-major is the extremely high percentage of respondents that either did not answer or did not know what time would be required for the non-major in the listed courses. Beyond the introductory courses the 'no response' answers averaged near 36% of the total.

It would appear that with a good introductory course in General Biology of one year's duration all other courses could be handled in one semester. This would apply to both major and non-major. The point of real argument would be the introductory courses for majors. In the catalogs it is noted that more schools have one semester courses in General Zoology, General Botany and Anatomy-Physiology than have the full year course.

It appears that some instructors can find reasons to require field trips for any course mentioned. However, the introductory courses and those courses usually designated as field courses are the ones that are indicated as needing field trips. The introductory courses that are one year in duration are recommended more for field trips than the one semester courses.

Course Credit

Eight semester hours of biological sciences is the minimum number recommended most for the community junior college. The average range was from eight to sixteen semester hours. Although the credit per course varied considerably from school to school the respondents consistently thought the credit per course should be greater. The exceptions to this was Comparative Anatomy (credit would be lessened) and Invertebrate and Vertebrate Zoology, Comparative Animal Physiology, Histology, and the introductory courses, all of which were recommended to receive the credit actually found in the catalogs.

The liberal arts student should take a full year course as a minimum which would be eight hours. The terminal student requirement should vary with his curriculum but be at least four to five hours.

Transfer of credit is strongly recommended if intended for transfer by the originating institution. Independent study courses were generally not considered for transfer. Nature Study, although considered a course the community college should offer, was generally considered not to be of a transfer nature. The course should be offered more for local graduation credit or as a community service. Many recommended, however, that this was the most sensible and serviceable course for elementary school teachers.

The practice of using open circuit T.V. to teach introductory biology courses was not recommended although the use of a concurrent laboratory made it more acceptable. The practice of allowing high school students to take college courses was endorsed for some courses. General Biology, General Zoology and General Botany were the ones most consistently suggested. In all cases, the private schools favored this practice more than the average of all the respondents.

It would appear that the respondents are saying that if the course is of college quality then offer it and for transfer credit. If it is treated as such, the senior institutions should accept the credits. Too, it seems that if a student appears to be ready to take a life science course in college he should be encouraged to take it. This would apply whether he be major or non-major and whether he be sophomore, freshman, exceptional high school senior, or a motivated adult. It would appear too that the respondents are saying do not proliferate the curriculum, but offer the sound basic courses which will satisfy the student population. Credit should not be inflexible for variable credit was suggested for many courses and curricula.

Course Prerequisites

Prerequisites were not found to exist in significant numbers in the catalogs studied. It does appear that in many cases the respondents would require more prerequisites than were actually found. However, in no case was the overall call for prerequisites great. The largest single call for a prerequisite was one year of General Biology for Genetics which was 40%. Generally the introductory courses were to be preceded by high school sciences both chemistry and biology. Courses beyond the introductory ones usually called for an introductory life science course as a prerequisite then with some special course requirements as chemistry in the physiology courses, Ecology, and Evolution. Genetics would require mathematics and botany. Two significant points that are to be noted here is the general call by the CUEBS panels for mathematics through Calculus and General Physics as a requirement for all biology majors on an undergraduate program. The respondents to this study showed no significant desire for either requirement.

The prerequisite is viewed as both a suggestion to the student and as a barrier to keep ill-prepared students from entering a course. Counseling of the advisee would appear to be significant to a great majority of the respondents. If a prerequisite is to be required it should appear as such in the catalog course description.

It would appear that most community junior colleges will use prerequisites to a small degree and will rely upon advisor-advisee relations to keep the ill-prepared from entering a course where he probably will not gain optimally. If a course is a recognized requisite for another course, it should be required and so indicated in the course description.

Core Curriculum

There is no agreement concerning a core curriculum in the community junior colleges, for the respondents are equally divided on this question. How should the two-year college react if a senior college were to initiate a core? There was an equal division between "offer the same core," and "offer introductory physical, biological and mathematical sciences." This is again reinforced by a division of the respondents to a similar question where they answered that it "will," or "will not alter" the two-year college curriculum.

Most respondents were aware of such a study as that of CUEBS. Almost twice as many four-year institutions were considering a core as were two-year colleges. Of those considering a core, most were approached from within their own department and not from an outside agency.

While the awareness of the core curriculum concept on the college level and in the biological sciences is widespread in the school studied, the inclination to act upon or initiate such a curriculum does not appear to be eminent in most schools. As has been noted throughout the history of the two-year college, the curriculum is often determined to a degree by the receiving institution. This factor is greater in some cases than in others. The two-year colleges will seriously undertake the study and structuring of a core curriculum when the senior institutions that receives her transfer students initiates their own core. Probably few core curricula will be needed or be initiated until such a stimulus is present. Then the questions of core or no core and which core will be of greater significance.

The Terminal Student

The respondents show a high degree of disagreement when considering the terminal student. This would probably stem from the frame of reference from which the instructor perceives this student. He may be a superior student in a demanding liberal arts program or a student in a vocational or technical area who resists any course that is not linked intimately with the trade or technology he is pursuing. There is general agreement that the life science requirement should vary depending upon the student and the curriculum in which he is involved. Although the respondents on two occasions have stated that duplicate courses could not be justified and special courses would be unwarranted, they here state that a special course should be structured for this group alone. General Biology, either one year or one semester is most often mentioned with a survey of the physical and biological sciences rating high.

The terminal student will remain a problem for some time. Although he labels himself a terminal student upon matriculation he may find a liking for college and continue on to the B.A. degree or even higher. Special courses and survey courses taken to satisfy a graduation requirement may cause trouble for the student and embarrassment to the institution if these credits will not transfer. Vocational and technical curricula are often so over-burdened with required skill subjects there is resistance to placing more courses in them.

The Adult Student

The adult student is one that seems to fit into one of two groups. He is the student who wants the regular courses offered in the "day school," and those students who are looking for general interest and hobby courses. Life science for the student in the extended day program is pictured as being the usual curriculum offered when there is sufficient demand. These courses will increasingly be taught by the regular staff and be for full transfer credit. The other group of extended day students will be offered courses of a less academic nature for general interest and knowledge for the student who does not want to pursue a degree. These courses of less than transfer quality will be allowed for local graduation credit. The adult program can only increase in size and scope as the citizenry becomes more education conscious and less satisfied with his present status.

Miscellaneous Questions

The respondents generally agree some advanced courses should not be offered in the summer session only. The largest majority answering this way were instructors from two-year schools. Probably the two most likely reasons for such a stand are, 1) two-year college students historically are of a lower socio-economic group and must work in the summer months in order to finance the next year's schooling, and, 2) many instructors, most not holding a post-master's degree, wish to use the summer months to return to school and/or take advantage of summer institutes and grants. This practice and this prejudice against summer courses only, will probably continue.

The preferred method of presenting Human Anatomy-Physiology is clearly indicated to be as a unified course. The two-year colleges will probably continue to offer Human Anatomy separate from Human Physiology because of demands from outside the discipline. Artists wish to require anatomy but could not care less about physiology. Other areas of teaching would likewise have use of one without the other. Where such demands exist the courses will probably remain separate.

Other areas have been observed that should be mentioned. The four-year and private colleges were found to have many practices and curricular aspects in common. These were not factors that were unique to them, but ones that were expressed to a higher degree by them than by the public and two-year schools.

The four-year and private colleges are most inclined to use an integrated-principles course in General Biology for both major and non-major than are the public and two-year colleges. Even though these schools prefer the General Biology course for all students, each would be more willing to defer this start in the biological sciences for majors until the sophomore year so that introductory physical science and mathematics can be completed. This tendency is also seen in the increased desire to see mathematics through Calculus and General Physics required for the zoology major in the 13th and 14th year.

There is a strong resistance on the part of the four-year and private colleges against duplicating courses. These schools are much more in favor of establishing a basic course and then offering it to all students regardless of major. Special courses (i.e. Anatomy-Physiology for Nurses) and survey courses were not well received by the four-year

colleges. The private schools did feel strongly that the terminal students should have courses structured for their general needs. This is the one area in which the specialists varied to a significant degree from the majority of respondents. The specialists were more in favor of the duplicate and special courses than the average of the other groups.

The use of General Zoology and General Botany, one semester each, for the terminal student was more heavily proposed by the private schools than by the other groups as long as they were not survey courses. The four-year schools were not in favor of such a course combination for terminal students regardless of whether it was survey or not.

There is a close relationship in the thinking of the four-year college zoology department chairmen and the respondents representing the private schools. The two groups appear to insist that a single course in the zoological sciences that could be called "traditional" should be sufficient for all students. It appears the assumption is that all students are equally served by a more traditional liberal arts approach and that what the student receives in this program should make him prepared for most any eventuality. The two-year and public schools, on the other hand, tend to more nearly meet the specific needs of the student taken individually or as an occupational group. This is not intended to degrade either group or their aims, for each are trying to orient their students towards a career goal which is different. The public two-year colleges deal more generally with the student who must, or at least desires, to be educated and made more immediately employable than the student who enters the four-year college or even most private institutions. This historically has developed as the general mission of each institution. Thus, it would be expected that more course duplication and

proliferation would be advocated by the public two-year school.

General Zoology and General Botany are found in a great number of two-year colleges. In a number of these schools the general education life science requirement or suggestion is fulfilled by a semester of each course. This will probably continue because of the efficiency to the institution. It is easier to combine the talents of two people, one trained in the animal and one in the plant sciences to meet the needs of the major and non-major. General Biology is probably more desired than the combination of Zoology and Botany but the use of these two courses in combination will probably persist for some time. Some universities are initiating programs to prepare teachers in biology for the junior college specifically. This is a person equally trained in the plant and animal sciences and trained to teach these areas. This program will probably develop slowly and the specifically trained zoologist and botanist will continue to teach in the two-year colleges.

Recommendations

1. The terminal student is one that can move in many directions and thus create problems of transfer and need. Since the terminal student can be in several curricula with varying needs, it appears that would be a fruitful area of study. An area that should be included here, as an important segment of the study of the terminal student, is the biological course needs of the student pursuing the paramedical curricula. This study should not only cover the type of course, but the content and how these courses differ from those in the regular curriculum of the life science department.

2. There is a marked concern over the content and use of the introductory courses in the biological sciences. The use of General Zoology and General Biology seems to be resisted by many senior colleges, while they are in use in most of the junior colleges studied. There seems to be a question concerning the overlap of course content between General Biology and the introductory zoology and botany courses. Many senior colleges representatives doubt the validity of having Human Anatomy and Human Physiology courses in the junior colleges. It appears that it would be wise to study the introductory courses, their use and content.

3. The junior college student that enters and succeeds on the junior college level as a zoology major is another area that should be studied in depth. What kind of student is this person, what is his academic achievement in the junior college and what is his achievement if he enters a biological program in a senior college? What is the opinion of the staff of the zoology department of the senior college concerning the junior college graduate and his preparation in the sciences? This should give a good picture of the quality of student that enters the junior college and majors in the biological sciences, his needs, and how he succeeds in the senior college. This group could then be compared to the quality and success of the native student in the biological sciences of the senior institution.

4. It might be profitable to study some of the innovations found in biological instruction in the junior colleges studied. There were cases where traditional courses are combined apparently to give more continuity to the materials covered. One case observed was the combination of Embryology-Anatomy-Histology into a course called Morphogenesis. Another course observed was the same as the one mentioned with the

addition of Physiology. With the prolific addition of principles and materials to the biological sciences, new methods of presenting the needed subject matter and laboratory materials should be developed, analyzed and publicized.

5. Since some junior colleges stated that they were using a core curriculum in the biological sciences it would be interesting to see how it is structured. It would also be profitable to see where its transfers go and how they are received.

6. One theme that reverberates throughout the replies of the senior college respondents was a seeming doubt of the adequate preparation of the junior college instructors in the biological sciences. It might be profitable to study the academic backgrounds of zoology instructors of the junior colleges, and then the same type of study of the senior college instructors to which the junior college students transfer. This would only be profitable if some method could be devised to judge the instructional proficiency of each instructor and not just the academic preparation alone.

7. A study of the laboratory methods and procedures should be made. There were wide divergencies in time utilization in laboratory, and there seemed to be a wide variance of materials covered in the laboratory session. Several institutions mentioned the use of autotutorial and other audio-visual methods of handling laboratory. A good composite of methods could possibly produce an efficient method of utilizing the laboratory period so that materials are properly covered with a minimum use of time.

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APPENDIX A

TABLE II

NUMBER OF SCHOOLS WITH TITLED COURSES

General Biology		General Zoology		General Botany		Human Anat. and Physiology		Human Anatomy		Human Physiology	
R	%	R	%	R	%	R	%	R	%	R	%
61	73.49	58	69.87	60	72.28	42	50.60	7	8.43	10	12.04

Comparative Anatomy		Invertebrate Zoology		Vertebrate Zoology		Comparative Animal Physiology		Vertebrate Embryology		Genetics	
R	%	R	%	R	%	R	%	R	%	R	%
26	31.32	6	7.22	6	7.22	1	1.20	8	9.63	19	22.89

Ornithology		Entomology		Intro. to Biol. Sci.		Histology		Ecology		Evolution		Nature Study	
R	%	R	%	R	%	R	%	R	%	R	%	R	%
2	2.40	9	10.84	5	6.02	10	12.04	14	16.86	10	12.04	4	4.81

TABLE III
COURSE(S) OF SINGLE DESCRIPTION

	General Biology		General Zoology		General Botany		Human Anatomy and Physiology		Human Anatomy		Human Physiology	
	R	%	R	%	R	%	R	%	R	%	R	%
No Course	19	22.89	25	30.12	22	26.50	41	49.39	76	81.56	73	87.95
One Course	53	63.85	52	62.65	56	67.46	37	44.57	7	8.43	10	12.04
Two Courses	8*	9.63	5	6.02	4	4.81	5	6.02	0	.00	0	.00
Night School Only	3	3.61	1	1.20	0	.00	0	.00	0	.00	0	.00
Summer Session Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00

	Comparative Anatomy		Invertebrate Zoology		Vertebrate Zoology		Comparative Animal Physiology		Vertebrate Embryology		Genetics	
	R	%	R	%	R	%	R	%	R	%	R	%
No Course	57	68.67	77	92.77	77	92.77	82	98.79	74	89.15	64	77.10
One Course	26	31.32	6	7.22	6	7.22	1	1.20	8	9.63	19	22.89
Two Courses	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Night School Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Summer Session Only	0	.00	0	.00	0	.00	0	.00	1	1.20	0	.00

TABLE III (Continued)

	Ornithology		Entomology		Intro. to Biol. Sci.		Histology		Ecology		Evolution		Nature Study	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%
No Course	81	97.59	74	89.15	78	93.97	73	87.95	69	83.13	73	87.95	79	95.18
One Course	2	2.40	9	10.84	5	6.02	10	12.04	14	16.86	10	12.04	4	4.81
Two Courses	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Night School Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Summer Session Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00

*: 10 schools not listed here have one semester General Zoology and one semester General Botany to meet the General Biology or Life Science requirement.

TABLE IV
 COMBINED WITH ANOTHER COURSE IN SEQUENCE

General Biology		General Zoology		General Botany		Human Anatomy and Physiology		Human Anatomy		Human Physiology	
R	%	R	%	R	%	R	%	R	%	R	%
6	7.22	16	19.27	15	18.07	0	.00	6	7.22	6	7.22

Comparative Anatomy		Invertebrate Zoology		Vertebrate Zoology		Comparative Animal Physiology		Vertebrate Embryology		Genetics	
R	%	R	%	R	%	R	%	R	%	R	%
2	2.40	3	3.61	3	3.61	0	.00	0	.00	0	.00

Ornithology		Entomology		Intro. to Biol. Sci.		Histology		Ecology		Evolution		Nature Study	
R	%	R	%	R	%	R	%	R	%	R	%	R	%
0	.00	0	.00	5	6.02	0	.00	0	.00	0	.00	0	.00

TABLE V
GROUP(S) TO WHICH THE COURSES ARE OPEN

	General Biology		General Zoology		General Botany		Human Anatomy and Physiology		Human Anatomy		Human Physiology	
	R	%	R	%	R	%	R	%	R	%	R	%
Biol.Majors Only	1	1.20	5	6.02	0	.00	1	1.20	1	1.20	0	.00
Gen.Students Only	19	22.89	3	3.61	2	2.40	0	.00	0	.00	1	1.20
Pre-Prof. Nursing Only	0	.00	0	.00	0	.00	7	8.43	1	1.20	1	1.20
Other Pre-Prof.Students Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
PE & Tchrs. Only	3	3.61	0	.00	0	.00	1	1.20	0	.00	1	1.20
Para-Medical Only	0	.00	0	.00	0	.00	3	3.61	2	2.40	1	1.20
Open to Gen. Enrollment	42	50.60	54	65.06	62	74.69	34	40.96	5	6.02	8	9.63
Night School Students Only	3	3.61	0	.00	0	.00	0	.00	0	.00	0	.00

	Comparative Anatomy		Invertebrate Zoology		Vertebrate Zoology		Comparative Animal Physiology		Vertebrate Embryology		Genetics	
	R	%	R	%	R	%	R	%	R	%	R	%
Biol.Majors Only	2	2.40	0	.00	0	.00	0	.00	1	1.20	0	.00
Gen.Students Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Pre-Prof. Nursing Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Other Pre-Prof.Students Only	0	.00	0	.00	0	.00	0	.00	1	1.20	0	.00

TABLE V (Continued)

	Comparative Anatomy		Invertebrate Zoology		Vertebrate Zoology		Comparative Animal Physiology		Vertebrate Embryology		Genetics	
	R	%	R	%	R	%	R	%	R	%	R	%
PE & Tchrs. Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Para-Medical Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Open to Gen. Enrollment	24	28.91	6	7.22	6	7.22	1	1.20	7	8.43	19	22.89
Night School Students Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00

	Ornithology		Entomology		Intro. to Biol. Sci.		Histology		Ecology		Evolution		Nature Study	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%
Biol. Majors Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Gen. Students Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Pre-Prof. Nursing Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Other Pre-Prof. Students Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
PE & Tchrs. Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	1	1.20
Para-Medical Only	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Open to Gen. Enrollment	2	2.40	9	10.84	3	3.61	10	12.04	14	16.86	10	12.04	2	2.40
Night School Students Only	0	.00	0	.00	*2	2.40	0	.00	0	.00	0	.00	1	1.20

* Terminal or Technical-Terminal Students Only.

TABLE VIII
CLOCK HOURS IN LABORATORY PER WEEK

	General Biology		General Zoology		General Botany		Human Anatomy and Physiology		Human Anatomy		Human Physiology	
	R	%	R	%	R	%	R	%	R	%	R	%
No Hours	5	6.02	1	1.20	0	.00	2	2.40	1	1.20	1	1.20
Two Hours	20	24.09	9	10.84	8	9.63	11	13.25	2	2.40	2	2.40
Three Hours	7	8.43	8	9.63	7	8.43	9	10.84	1	1.20	2	2.40
Four Hours	20	24.09	27	32.53	32	38.55	9	10.84	2	2.40	2	2.40
Five Hours	0	.00	0	.00	1	1.20	0	.00	0	.00	0	.00
Six Hours	2	2.40	4	4.81	4	4.81	0	.00	1	1.20	0	.00
Time Varies in Lab	0	.00	1	1.20	3	3.61	2	2.40	0	.00	0	.00
Time not indicated	14	16.86	13	15.66	12	14.45	13	15.66	1	1.20	2	2.40

	Comparative Anatomy		Invertebrate Zoology		Vertebrate Zoology		Comparative Animal Physiology		Vertebrate Embryology		Genetics	
	R	%	R	%	R	%	R	%	R	%	R	%
No Hours	1	1.20	0	.00	0	.00	0	.00	0	.00	8	9.63
Two Hours	0	.00	0	.00	0	.00	0	.00	0	.00	2	2.40
Three Hours	1	1.20	0	.00	2	2.40	1	1.20	2	2.40	2	2.40
Four Hours	7	8.43	4	4.81	2	2.40	0	.00	3	3.61	0	.00
Five Hours	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Six Hours	10	12.04	1	1.20	1	1.20	0	.00	2	2.40	0	.00
Time Varies in Lab	1	1.20	0	.00	0	.00	0	.00	0	.00	2	2.40
Time not indicated	6	7.22	1	1.20	1	1.20	0	.00	1	1.20	5	6.02

TABLE VIII (Continued)

	Ornithology		Entomology		Intro. to Biol. Sci.		Histology		Ecology		Evolution		Nature Study	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%
No Hours	0	.00	1	1.20	1	1.20	0	.00	0	.00	10	12.04	2	2.40
Two Hours	0	.00	3	3.61	2	2.40	0	.00	1	1.20	0	.00	0	.00
Three Hours	1	1.20	3	3.61	0	.00	1	1.20	1	1.20	0	.00	0	.00
Four Hours	0	.00	2	2.40	0	.00	9	10.84	0	.00	0	.00	1	1.20
Five Hours	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Six Hours	0	.00	0	.00	0	.00	0	.00	1	1.20	0	.00	0	.00
Time Varies in Lab	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Time not indicated	1	1.20	0	.00	2	2.40	0	.00	11	13.25	0	.00	1	1.20

TABLE IX
LABORATORY HOURS FOR ONE HOUR CREDIT

	General Biology		General Zoology		General Botany		Human Anatomy and Physiology		Human Anatomy		Human Physiology	
	R	%	R	%	R	%	R	%	R	%	R	%
No Credit	1	1.20	1	1.20	1	1.20	2	2.40	0	.00	0	.00
Two Hours	33	39.75	29	34.93	33	39.75	18	21.68	4	4.81	4	4.81
Three Hours	7	8.43	8	9.63	7	8.43	7	8.43	2	2.40	3	3.61
Four Hours	6	7.22	7	8.43	8	9.63	2	2.40	0	.00	0	.00
Credit Varies	2	2.40	2	2.40	2	2.40	0	.00	0	.00	0	.00
Cr. inconsistent within school and between crses.	27	32.53	0	.00	0	.00	0	.00	0	.00	0	.00

	Comparative Anatomy		Invertebrate Zoology		Vertebrate Zoology		Comparative Animal Physiology		Vertebrate Embryology		Genetics	
	R	%	R	%	R	%	R	%	R	%	R	%
No Credit	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Two Hours	9	10.84	4	4.81	2	2.40	0	.00	2	2.40	1	1.20
Three Hours	6	7.22	1	1.20	3	3.61	1	1.20	3	3.61	2	2.40
Four Hours	2	2.40	0	.00	0	.00	0	.00	2	2.40	0	.00
Credit Varies	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Cr. inconsistent within school and between crses.	1	1.20	0	.00	0	.00	0	.00	0	.00	0	.00

TABLE X
COURSE PREREQUISITES

	General Biology		General Zoology		General Botany		Human Anatomy and Physiology		Human Anatomy		Human Physiology	
	R	%	R	%	R	%	R	%	R	%	R	%
Gen. Biol.	0	.00	8	9.63	8	9.63	8	9.63	2	2.40	5	6.02
Gen. Zool.	0	.00	0	.00	1	1.20	6	7.22	3	3.61	4	4.81
Gen. Botany	0	.00	0	.00	0	.00	1	1.20	0	.00	0	.00
Chemistry	0	.00	0	.00	0	.00	1	1.20	0	.00	2	2.40
High School Science	0	.00	1	1.20	3	3.61	0	.00	0	.00	1	1.20
Instructor Consent	0	.00	1	1.20	2	2.40	0	.00	2	2.40	2	2.40
Soph. Standing	0	.00	0	.00	1	1.20	0	.00	0	.00	0	.00

	Comparative Anatomy		Invertebrate Zoology		Vertebrate Zoology		Comparative Animal Physiology		Vertebrate Embryology		Genetics	
	R	%	R	%	R	%	R	%	R	%	R	%
Gen. Biol.	8	9.63	5	6.02	3	3.61	1	1.20	3	3.61	10	12.04
Gen. Zool.	15	18.07	0	.00	1	1.20	0	.00	5	6.02	8	9.63
Gen. Botany	0	.00	0	.00	0	.00	0	.00	0	.00	10	12.04
Chemistry	1	1.20	0	.00	0	.00	0	.00	0	.00	0	.00
High School Science	0	.00	2	2.40	1	1.20	0	.00	0	.00	2	2.40
Instructor Consent	1	1.20	0	.00	0	.00	0	.00	0	.00	0	.00
Soph. Standing	2	2.40	0	.00	0	.00	0	.00	0	.00	6	7.22

TABLE X (Continued)

	Ornithology		Entomology		Intro. to Biol. Sci.		Histology		Ecology		Evolution		Nature Study	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%
Gen. Biol.	0	.00	1	1.20	0	.00	2	2.40	4	4.81	9	10.84	0	.00
Gen. Zool.	0	.00	3	3.61	0	.00	9	0.84	2	2.40	1	1.20	0	.00
Gen. Botany	0	.00	1	1.20	0	.00	0	.00	2	2.40	0	.00	0	.00
Chemistry	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
High School Science	0	.00	0	.00	1	1.20	0	.00	0	.00	0	.00	0	.00
Instructor Consent	0	.00	0	.00	0	.00	0	.00	2	2.40	0	.00	0	.00
Soph. Standing	0	.00	0	.00	0	.00	0	.00	0	.00	1*	1.20	0	.00

* Genetics required prerequisite.

TABLE XI
MEET MAJOR REQUIREMENTS

General Biology		General Zoology		General Botany		Human Anatomy and Physiology		Human Anatomy		Human Physiology	
R	%	R	%	R	%	R	%	R	%	R	%
25	30.12	58	69.87	60	72.28	36	43.37	6	7.22	8	9.63

Comparative Anatomy		Invertebrate Zoology		Vertebrate Zoology		Comparative Animal Physiology		Vertebrate Embryology		Genetics	
R	%	R	%	R	%	R	%	R	%	R	%
26	31.32	6	7.22	6	7.22	1	1.20	8	9.63	19	22.89

Ornithology		Entomology		Intro. to Biol. Sci.		Histology		Ecology		Evolution		Nature Study	
R	%	R	%	R	%	R	%	R	%	R	%	R	%
2	2.40	9	10.84	0	.00	12	14.45	14	16.86	10	12.04	4	4.81

TABLE XII

GENERAL BIOLOGY SHOULD BE CONSIDERED A REMEDIAL COURSE
AND NOT OFFERED FOR COLLEGE CREDIT:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. yes, this statement is true.											
Instructor	3.70	1	.45	1	.58	0	.00	1	.62	0	.00
		*1	.45	1	.58	0	.00	1	.62	0	.00
B. no, for there is a need for such a course on the college level.											
President	83.33	15	6.88	15	8.77	0	.00	11	6.83	4	8.16
Chairman	81.48	22	10.09	0	.00	22	56.41	17	10.55	5	10.20
Instructor	89.78	123	56.42	123	71.92	0	.00	96	59.62	27	55.10
NSF	89.28	25	11.46	13	7.60	12	30.76	15	9.31	10	20.40
Specialist	100.00	8	3.66	0	.00	0	.00	0	.00	0	.00
		*193	88.53	151	83.30	34	87.17	139	86.33	46	93.87
No Answer											
President	16.66	3	1.37	3	1.75	0	.00	2	1.24	1	2.04
Chairman	18.51	5	2.29	0	.00	5	12.82	4	2.48	1	2.04
Instructor	9.48	13	5.96	13	7.60	0	.00	12	7.45	1	2.04
NSF	10.71	3	1.37	3	1.75	0	.00	3	1.86	0	.00
		*24	11.00	19	11.11	5	12.82	21	13.04	3	6.12

TABLE XIII

BECAUSE OF THE INTRODUCTION OF BSCS PROGRAMS IN MANY HIGH SCHOOLS THE GENERAL BIOLOGY COURSE
IN THE COMMUNITY JUNIOR COLLEGE SHOULD BE ELIMINATED:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. yes.											
Instructor	16.66	3	1.37	3	1.75	0	.00	3	1.86	0	.00
		*3	1.37	3	1.75	0	.00	3	1.86	0	.00
B. no.											
President	100.00	18	8.25	18	10.52	0	.00	13	8.07	5	10.20
Chairman	96.29	26	11.92	0	.00	26	66.66	20	12.42	6	12.24
Instructor	88.32	121	55.50	121	70.76	0	.00	98	60.86	23	46.93
NSF	92.85	26	11.92	15	8.77	11	28.20	17	10.55	9	18.36
Specialist	75.00	6	2.75	0	.00	0	.00	0	.00	0	.00
		*197	90.36	154	90.05	37	94.87	148	91.92	43	87.75
C. in most schools.											
Instructor	.72	1	.45	1	.58	0	.00	1	.62	0	.00
		*1	.45	1	.58	0	.00	1	.62	0	.00
D. in some schools.											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	4.37	6	2.75	6	3.50	0	.00	3	1.86	3	6.12
NSF	3.57	1	.45	0	.00	1	2.56	0	.00	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*9	4.12	6	3.50	2	5.12	4	2.48	4	8.16
No Answer											
Instructor	4.37	6	2.75	6	3.50	0	.00	4	2.48	2	4.08
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*8	3.66	7	4.09	0	.00	5	3.10	2	4.08

TABLE XIV

SHOULD THE LIBERAL ARTS MAJOR OR GENERAL
EDUCATION STUDENT:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. have a General Biology course especially designed to meet their life science requirement.											
President	44.44	8	3.66	8	4.67	0	.00	7	4.34	1	2.04
Chairman	40.74	11	5.04	0	.00	11	28.20	8	4.96	3	6.12
Instructor	37.22	51	23.39	51	29.82	0	.00	49	30.43	2	4.08
NSF	39.28	11	5.04	6	3.50	5	12.82	8	4.96	3	6.12
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*86	39.44	65	38.01	16	41.02	72	44.72	9	18.36
B. take a General Biology course designed to meet the needs of the life science major and non-major alike.											
President	38.88	7	3.21	7	4.09	0	.00	4	2.48	3	6.12
Chairman	59.25	16	7.33	0	.00	16	41.02	13	8.07	3	6.12
Instructor	54.74	75	34.40	75	43.85	0	.00	53	32.91	22	44.89
NSF	60.71	17	7.79	10	5.84	7	17.94	10	6.21	7	14.28
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*117	53.66	92	53.80	23	58.97	80	49.68	35	71.42
C. be required to take either General Zoology or General Botany to fulfill the life science requirement.											
President	16.66	3	1.37	3	1.75	0	.00	2	1.24	1	2.04
Instructor	5.10	7	3.21	7	4.09	0	.00	7	4.34	0	.00
		*10	4.58	10	5.84	0	.00	9	5.59	1	2.04

TABLE XIV (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
No Answer											
Instructor	2.91	4	1.83	4	2.33	0	.00	0	.00	4	8.16
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*5	2.29	4	2.33	0	.00	0	.00	4	8.16

TABLE XV

WHAT COURSE(S) SHOULD BE OFFERED TO ENTERING FRESHMEN WHO ARE NOT MAJORING IN BIOLOGY, PRE-MEDICAL OR PARA-MEDICAL PROGRAMS?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. General Biology, full year in duration.											
President	55.55	10	4.58	10	5.84	0	.00	7	4.34	3	6.12
Chairman	59.25	16	7.33	0	.00	16	41.02	10	6.21	6	12.24
Instructor	48.17	66	30.27	66	38.59	0	.00	51	31.67	15	30.61
NSF	64.28	18	8.25	9	5.26	9	23.07	11	6.83	7	14.28
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*114	52.29	85	44.70	25	64.10	79	49.06	31	63.26
B. General Biology, one term in duration.											
President	16.66	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Chairman	22.22	6	2.75	0	.00	6	15.38	6	3.72	0	.00
Instructor	21.89	30	13.76	30	17.54	0	.00	25	15.52	5	10.20
NSF	25.00	7	3.21	4	2.33	3	7.69	4	2.48	3	6.12
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*48	22.01	37	21.63	9	23.07	38	23.60	8	16.36
C. General Biology and General Zoology or General Botany to complete the year.											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	9.48	13	5.96	13	7.60	0	.00	9	5.59	4	8.16
NSF	10.71	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*20	9.17	16	9.35	2	5.12	14	8.69	4	8.16

TABLE XV (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
D. General Zoology and General Botany, one term each.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	11.11	3	1.37	0	.00	3	7.69	3	1.86	0	.00
Instructor	11.67	16	7.33	16	9.35	0	.00	12	7.45	4	8.16
NSF	17.85	5	2.29	2	1.16	3	7.69	2	1.24	3	6.12
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*27	12.38	19	11.11	6	15.38	18	11.18	7	14.28
E. General Zoology or General Botany, one year in duration.											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Instructor	7.29	10	4.58	10	5.84	0	.00	8	4.96	2	4.08
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*12	5.50	11	6.43	0	.00	9	5.59	2	4.08
F. General Biology Survey & Phys. Science Survey of one semester each.											
President	38.88	7	3.21	7	4.09	0	.00	4	2.48	3	6.12
Chairman	33.33	9	4.12	0	.00	9	23.07	7	4.34	2	4.08
Instructor	28.46	39	17.88	39	22.80	0	.00	33	20.49	6	12.24
NSF	28.57	8	3.66	6	3.50	2	5.12	5	3.10	3	6.12
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*66	30.27	52	30.40	11	28.20	49	30.43	14	28.57

TABLE XV (Continued)

Alternatives	Totals		Two-Year		Four-Year		Public		Private		
	%	R	%	R	%	R	%	R	%	R	
G. Other (please indicate course, title & duration.)											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	11.11	3	1.37	0	.00	3	7.69	3	1.86	0	.00
Instructor	6.56	9	4.12	9	5.26	0	.00	7	4.34	2	4.08
NSF	3.57	1	.45	0	.00	1	2.56	0	.00	1	2.04
Specialist	.00	0	.00	0	.00	0	.00	0	.00	0	.00
		*13	5.96	9	5.26	4	10.25	10	6.21	3	6.12
No Answer											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Instructor	.72	1	.45	1	.58	0	.00	0	.00	1	2.04
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
Specialist	.00	0	.00	0	.00	0	.00	0	.00	0	.00
		*2	.91	2	1.16	0	.00	1	.62	1	2.04

TABLE XVI

WHAT TYPE OR TYPES OF GENERAL BIOLOGY COURSES SHOULD BE OFFERED IN
THE ADULT OR EVENING SCHOOL PROGRAM?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. The General Biology course regularly offered at the institution for transfer credit.											
President	50.00	9	4.12	9	5.26	0	.00	6	3.72	3	6.12
Chairman	55.55	15	6.88	0	.00	15	38.46	11	6.83	4	8.16
Instructor	61.31	84	38.53	84	49.12	0	.00	63	39.13	21	42.85
NSF	14.28	18	8.25	11	6.43	7	17.94	11	6.83	7	14.28
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*127	58.25	104	60.81	22	56.41	91	56.52	35	71.42
B. A General Biology course of a less academic nature, offered to this group only for local credit.											
Chairman	7.40	2	.91	0	.00	2	5.12	1	.62	1	2.04
Instructor	.72	1	.45	1	.58	0	.00	1	.62	0	.00
NSF	3.57	1	.45	0	.00	1	2.56	0	.00	1	2.04
		*4	1.83	1	.58	3	7.69	2	1.24	2	4.08
C. Both types of courses mentioned in "A" and "B" above, one of a transfer credit nature and the other for local credit.											
President	50.00	9	4.12	9	5.26	0	.00	7	4.34	2	4.08
Chairman	33.33	9	4.12	0	.00	9	23.07	8	4.96	1	2.04

TABLE XVI (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
Instructor	33.57	46	21.10	46	26.90	0	.00	40	24.84	6	12.24
NSF	28.57	8	3.66	5	2.92	3	7.69	6	3.72	2	4.08
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*77	35.32	60	35.08	12	30.76	61	37.88	11	22.44
No Answer											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	4.37	6	2.75	6	3.50	0	.00	5	3.10	1	2.04
NSF	3.57	1	.45	0	.00	1	2.56	1	.62	0	.00
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*10	4.58	6	3.50	2	5.12	7	4.34	1	2.04

TABLE XVII

WHICH OF THE FOLLOWING COURSES SHOULD BE A PART OF THE CURRICULUM
OF THE TERMINAL STUDENT:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. General Biology, one semester in duration.											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	29.62	8	3.66	0	.00	8	20.51	6	3.72	2	4.08
Instructor	31.38	43	19.72	43	25.14	0	.00	38	23.60	5	10.20
NSF	35.71	10	4.58	6	3.50	4	10.25	8	4.96	2	4.08
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*67	30.73	51	29.82	12	30.76	54	33.54	9	18.36
B. General Biology, two semesters duration.											
President	33.33	6	2.75	6	3.50	0	.00	4	2.48	2	4.08
Chairman	44.44	12	5.50	0	.00	12	30.76	8	4.96	4	8.16
Instructor	40.87	56	25.68	56	32.74	0	.00	35	21.73	19	38.77
NSF	35.71	10	4.58	4	2.33	6	15.38	6	3.72	4	8.16
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*87	39.90	66	38.59	18	46.15	53	32.91	29	59.18
C. General Zoology or General Botany, one year of either.											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	1	.62	1	2.04
Instructor	3.64	5	2.29	5	2.92	0	.00	5	3.10	0	.00
NSF	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Specialist	.00	0	.00	0	.00	0	.00	0	.00	0	.00
		*7	3.21	5	2.92	2	5.12	6	3.72	1	2.04

TABLE XVII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
D. General Zoology Survey and General Botany Survey, one semester of each.											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	10.94	15	6.88	15	8.77	0	.00	11	6.83	4	8.16
NSF	7.14	2	.91	1	.58	1	2.56	1	.62	1	2.04
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*23	10.55	18	10.52	3	7.69	16	9.93	5	10.20
E. General Biology Survey and General Phys. Science Survey, one semester each.											
President	33.33	6	2.75	6	3.50	0	.00	4	2.48	2	4.08
Chairman	37.03	10	4.58	0	.00	10	25.64	8	4.96	2	4.08
Instructor	28.46	39	17.88	39	22.80	0	.00	34	21.11	5	10.20
NSF	46.42	13	5.96	8	4.67	5	12.82	8	4.96	5	10.20
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*71	32.56	53	30.99	15	38.46	54	33.54	14	28.57
F. Biological Science course is not essential in the terminal curricula.											
President	11.11	2	.91	2	1.16	0	.00	1	.62	1	2.04
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	6.56	9	4.12	9	5.26	0	.00	9	5.59	0	.00
NSF	10.71	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*17	7.79	14	8.18	2	5.12	15	9.31	1	2.04

TABLE XVII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	0.00	0	.00	0	.00	0	.00	0	.00	0	.00
Instructor	6.56	9	4.12	9	5.26	0	.00	8	4.96	1	2.04
NSF	0.00	0	.00	0	.00	0	.00	0	.00	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*11	5.04	9	5.26	0	.00	9	5.59	1	2.04

TABLE XVIII

A GENERAL BIOLOGY COURSE SUFFICIENT IN CONTENT TO EQUAL OR REPLACE
GENERAL ZOOLOGY AND/OR GENERAL BOTANY:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Should be one semester in duration.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	3.64	5	2.29	5	2.92	0	.00	3	1.86	2	4.08
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
		*8	3.70	7	4.09	1	2.56	6	3.72	2	4.08
B. Should be one year in duration.											
President	72.22	13	5.96	13	7.60	0	.00	10	6.21	3	6.12
Chairman	77.77	21	9.63	0	.00	21	53.84	15	9.31	6	12.24
Instructor	83.21	114	52.29	114	66.66	0	.00	90	55.90	24	48.97
NSF	85.71	24	11.00	12	7.01	12	30.77	14	8.69	10	20.40
Specialist	75.00	6	2.75	0	.00	0	.00	0	.00	0	.00
		*178	81.70	139	81.28	33	84.61	129	80.12	43	87.75
C. Cannot be covered even in one year.											
President	16.66	3	1.37	3	1.75	0	.00	2	1.24	1	2.04
Chairman	14.81	4	1.83	0	.00	4	10.25	4	2.48	0	.00
Instructor	13.13	18	8.25	18	10.52	0	.00	16	9.93	2	4.08
NSF	10.71	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*29	13.30	24	14.03	4	10.25	25	15.52	3	6.12
No Answer											
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	1	2.04
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
President	5.55	1	.45	1	.58	0	.00	0	.00	0	.00
		*3	1.30	1	.58	1	2.56	1	.62	1	2.04

TABLE XIX.

IF A STUDENT TAKES GENERAL BIOLOGY FIRST AND THEN TAKES GENERAL ZOOLOGY
OR GENERAL BOTANY THE HOURS OF CREDIT IN GENERAL BIOLOGY SHOULD BE :

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. granted in full.											
President	66.66	12	5.50	12	7.01	0	.00	10	6.21	2	4.08
Chairman	55.55	15	6.88	0	.00	15	38.46	13	8.07	2	4.08
Instructor	62.04	85	38.99	85	49.70	0	.00	67	41.61	18	36.73
NSF	78.57	22	10.09	12	7.01	10	25.64	14	8.69	8	16.32
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*139	63.76	109	63.74	25	64.10	104	64.59	30	61.22
B. reduced.											
President	22.22	4	1.83	4	2.34	0	.00	1	.62	3	6.12
Chairman	22.22	6	2.75	0	.00	6	15.38	4	2.48	2	4.08
Instructor	19.70	27	12.38	27	15.78	0	.00	20	12.42	7	14.28
NSF	7.14	2	.91	2	1.16	0	.00	2	1.24	0	.00
		*39	17.88	33	19.29	6	15.38	27	16.77	12	24.48
C. withheld.											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	11.11	3	1.37	0	.00	3	7.69	2	1.24	1	2.04
Instructor	15.32	21	9.63	21	12.28	0	.00	18	11.18	3	6.12
NSF	10.71	3	1.37	1	.58	2	5.12	2	1.24	1	2.04
		*29	13.30	24	14.03	5	12.82	24	14.90	5	10.20
No Answer											
Chairman	11.11	3	1.37	0	.00	3	7.69	2	1.24	1	2.04
Instructor	2.91	4	1.83	4	2.34	0	.00	4	2.48	0	.00
NSF	3.57	1	.45	1	.58	0	.00	0	.00	1	2.04
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*11	5.04	5	2.92	3	7.69	6	3.72	2	4.08

TABLE XX

IF A STUDENT TAKES GENERAL BIOLOGY AFTER COMPLETING EITHER GENERAL ZOOLOGY
OR GENERAL BOTANY, THE CREDIT IN GENERAL BIOLOGY SHOULD BE:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. granted in full.											
President	27.77	5	2.29	5	2.92	0	.00	4	2.48	1	2.04
Chairman	7.40	2	.91	0	.00	2	5.12	1	.62	1	2.04
Instructor	25.54	35	16.05	35	20.46	0	.00	25	15.52	10	20.40
NSF	42.85	12	5.50	8	4.67	4	10.25	8	4.96	4	8.16
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*56	25.68	48	28.07	6	15.38	38	23.60	16	32.65
B. reduced.											
President	16.66	3	1.37	3	1.75	0	.00	1	.62	2	4.08
Chairman	25.92	7	3.21	0	.00	7	17.94	6	3.72	1	2.04
Instructor	24.08	33	15.13	33	19.29	0	.00	30	18.63	3	6.12
NSF	14.28	4	1.83	2	1.16	2	5.12	3	1.86	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*48	22.01	38	22.22	9	23.07	40	24.84	7	14.28
C. withheld.											
President	55.55	10	4.58	10	5.84	0	.00	8	4.96	2	4.08
Chairman	55.55	15	6.88	0	.00	15	38.46	12	7.45	3	6.12
Instructor	47.44	65	29.81	65	38.01	0	.00	52	32.29	13	26.53
NSF	35.71	10	4.58	5	2.92	5	12.82	7	4.34	3	6.12
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*101	46.33	80	46.78	20	51.28	79	49.06	21	42.85
No Answer											
Chairman	11.11	3	1.37	0	.00	3	7.69	2	1.24	1	2.04
Instructor	2.91	4	1.83	4	2.34	0	.00	2	1.24	2	4.08
NSF	7.14	2	.91	1	.58	1	2.56	0	.00	2	4.08
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*13	5.96	5	2.92	4	10.25	4	2.48	5	10.20

TABLE XXI

FULL CREDIT IN GENERAL BIOLOGY SHOULD BE ALLOWED TOWARDS A
BIOLOGY MAJOR IF TAKEN IN THE SEQUENCE:FIRST:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. No.											
President	22.22	4	1.83	4	2.34	0	.00	3	1.86	1	2.04
Chairman	11.11	3	1.37	0	.00	3	7.69	3	1.86	0	.00
Instructor	17.51	24	11.00	24	14.03	0	.00	18	11.18	6	12.24
NSF	10.71	3	1.37	3	1.75	0	.00	3	1.86	0	.00
		*34	15.59	31	18.12	3	7.69	27	16.77	7	14.28
B. Yes.											
President	55.55	10	4.58	10	5.84	0	.00	7	4.34	3	6.12
Chairman	33.33	9	4.12	0	.00	9	23.07	7	4.34	2	4.08
Instructor	37.22	51	23.39	51	29.82	0	.00	40	24.84	11	22.44
NSF	53.57	15	6.88	8	4.67	7	17.94	8	4.96	7	14.28
Specialist	75.00	6	2.75	0	.00	0	.00	0	.00	0	.00
		*91	41.74	69	40.35	16	41.02	62	38.50	23	46.93
C. Yes, if not of the survey type.											
President	22.22	4	1.83	4	2.34	0	.00	3	1.86	1	2.04
Chairman	55.55	15	6.88	0	.00	15	38.46	11	6.83	4	8.16
Instructor	40.87	56	25.68	56	32.74	0	.00	47	29.19	9	18.36
NSF	35.71	10	4.58	5	2.92	5	12.82	7	4.34	3	6.12
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*86	39.45	65	38.01	20	51.28	68	42.23	17	34.69
No Answer											
Instructor	4.37	6	2.75	6	3.50	0	.00	4	2.48	2	4.08
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*7	3.21	6	3.50	0	.00	4	2.48	2	4.08

TABLE XXII

LABORATORY SESSIONS FOR LIBERAL ARTS MAJORS IN GENERAL
BIOLOGY SHOULD BE CONSIDERED AS:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. not essential for this type student.											
Instructor	1.45	2	.91	2	1.16	0	.00	2	1.24	0	.00
		*2	.91	2	1.16	0	.00	2	1.24	0	.00
B. needed to show a unique phase of science.											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	8.02	11	5.04	11	6.43	0	.00	9	5.59	2	4.08
NSF	10.71	3	1.37	1	.58	2	5.12	2	1.24	1	2.04
		*15	6.88	12	7.01	3	7.69	12	7.45	3	6.12
C. not essential since pertinent materials could be covered in demonstration or by audio-visual materials.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	2.91	4	1.83	4	2.33	0	.00	3	1.86	1	2.04
		*7	3.21	5	2.92	2	5.12	6	3.72	1	2.04
D. an integral part of science teaching regardless of the student being taught.											
President	88.88	16	7.33	16	9.35	0	.00	11	6.83	5	10.20
Chairman	85.18	23	10.55	0	.00	23	58.97	17	10.55	6	12.24
Instructor	84.67	116	53.21	116	67.83	0	.00	92	57.14	24	48.97
NSF	89.28	25	11.46	15	8.77	10	25.64	16	9.93	9	18.36
Specialist	100.00	8	3.66	0	.00	0	.00	0	.00	0	.00
		*188	86.23	147	85.96	33	84.61	136	84.47	44	89.79

TABLE XXII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	2.91	4	1.83	4	2.33	0	.00	3	1.86	1	2.04
		*6	2.75	5	2.92	1	2.56	5	3.10	1	2.04

TABLE XXIII

LABORATORY SESSIONS IN GENERAL BIOLOGY FOR THE ADULT OR EVENING SCHOOL
STUDENTS SHOULD BE CONSIDERED AS:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. not essential for this student.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Instructor	1.45	2	.91	2	1.16	0	.00	2	1.24	0	.00
		*3	1.37	3	1.75	0	.00	3	1.86	0	.00
B. needed to show a unique phase of science.											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	7.29	10	4.58	10	5.84	0	.00	10	6.21	0	.00
NSF	3.57	1	.45	0	.00	1	2.56	0	.00	1	2.04
		*12	5.50	10	5.84	2	5.12	11	6.83	1	2.04
C. not essential since pertinent materials could be covered in demonstration or audio-visual materials.											
Chairman	14.81	4	1.83	0	.00	4	10.25	4	2.48	0	.00
Instructor	8.02	11	5.04	11	6.43	0	.00	8	4.96	3	6.12
		*15	6.88	11	6.43	4	10.25	12	7.45	3	6.12
D. an integral part of science teaching regardless of the student being taught.											
President	88.88	16	7.33	16	9.35	0	.00	12	7.45	4	8.16
Chairman	77.77	21	9.63	0	.00	21	53.84	15	9.31	6	12.24
Instructor	73.72	101	46.33	101	59.06	0	.00	77	47.82	24	48.97
NSF	85.71	24	11.00	15	8.77	9	23.07	15	9.31	9	18.36
Specialist	100.00	8	3.66	0	.00	0	.00	0	.00	0	.00
		*170	77.98	132	77.19	30	76.92	119	73.91	43	87.75

TABLE XXIII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
E. necessary to give adequate time to cover all of the material contained in the course.											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Instructor	5.83	8	3.66	8	4.67	0	.00	8	4.96	0	.00
		*9	4.12	9	5.26	0	.00	8	4.96	1	2.04
No Answer											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	3.64	5	2.29	5	2.92	0	.00	4	2.48	1	2.04
NSF	10.71	3	1.37	1	.58	2	5.12	3	1.86	0	.00
		*9	4.12	6	3.50	3	7.69	8	4.96	1	2.04

TABLE XXIV

WHICH OF THE FOLLOWING SHOULD BE PREREQUISITES FOR GENERAL BIOLOGY?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. No prerequisite necessary.											
President	88.88	16	7.33	16	9.35	0	.00	11	6.33	5	10.20
Chairman	62.96	17	7.79	0	.00	17	43.58	15	9.31	2	4.08
Instructor	69.34	95	43.57	95	55.55	0	.00	77	47.82	18	36.73
NSF	78.57	22	10.09	11	6.43	11	28.20	14	8.69	8	16.32
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*155	71.10	122	71.34	28	71.79	117	72.67	33	67.34
B. High School Biology.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	22.22	6	2.75	0	.00	6	15.38	5	3.10	1	2.04
Instructor	16.05	22	10.09	22	12.86	0	.00	18	11.18	4	8.16
NSF	10.71	3	1.37	1	.58	2	5.12	2	1.24	1	2.04
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*35	16.05	24	14.03	8	20.51	26	16.14	6	12.24
C. High School Advanced Biology.											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Instructor	2.91	4	1.83	4	2.33	0	.00	4	2.48	0	.00
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
Specialist	.00	0	.00	0	.00	0	.00	0	.00	0	.00
		*5	2.29	5	2.92	0	.00	5	3.10	0	.00
D. High School Chemistry											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	18.51	5	2.29	0	.00	5	12.82	5	3.10	0	.00
Instructor	21.89	30	13.76	30	17.54	0	.00	23	14.28	7	14.38
NSF	21.42	6	2.75	3	1.75	3	7.69	2	1.24	4	8.16
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*44	20.18	34	19.86	8	20.51	31	19.25	11	22.44

TABLE XXIV (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
E. A minimum composite or natural science score on a national achievement exam.											
President	16.66	3	1.37	3	1.75	0	.00	2	1.24	1	2.04
Chairman	29.62	8	3.66	0	.00	8	4.67	4	2.48	4	8.16
Instructor	16.05	22	10.09	22	12.86	0	.00	18	11.18	4	8.16
NSF	10.71	3	1.37	2	1.16	1	2.56	2	1.24	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*37	16.97	27	15.78	9	5.26	26	16.14	10	20.40
No Answer											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Instructor	1.45	2	.91	2	1.16	0	.00	2	1.24	0	.00
NSF	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*3	1.37	2	1.16	0	.00	2	1.24	0	.00

TABLE XXV

GENERAL BIOLOGY SHOULD SERVE AS A PREREQUISITE FOR:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. All life science courses that follow.											
President	33.33	6	2.75	6	3.50	0	.00	5	3.10	1	2.04
Chairman	66.66	18	8.25	0	.00	18	46.15	13	8.07	5	10.20
Instructor	39.41	54	24.77	54	31.57	0	.00	40	24.84	14	28.57
NSF	64.28	18	8.25	9	5.26	9	23.07	10	6.21	8	16.32
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*101	46.33	69	40.35	27	69.23	68	42.23	28	57.14
B. None of the other life science courses offered.											
President	27.77	5	2.29	5	2.92	0	.00	4	2.48	1	2.04
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	18.97	26	11.92	26	15.20	0	.00	24	14.90	2	4.08
NSF	7.14	2	.91	2	1.16	0	.00	2	1.24	0	.00
		*34	15.59	33	19.29	1	2.56	31	19.25	3	6.12
C. Some life science courses, but not all.											
President	33.33	6	2.75	6	3.50	0	.00	4	2.48	2	4.08
Chairman	14.81	4	1.83	0	.00	4	10.25	4	2.48	0	.00
Instructor	32.11	44	20.18	44	25.73	0	.00	34	21.11	10	20.40
NSF	21.42	6	2.75	4	2.33	2	5.12	5	3.10	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*61	27.98	54	31.57	6	15.38	47	29.19	13	26.53
No Answer											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Chairman	14.81	4	1.83	0	.00	4	10.25	3	1.86	1	2.04
Instructor	9.48	13	5.96	13	7.60	0	.00	11	6.83	2	4.08
NSF	7.14	2	.91	1	.58	1	2.56	1	.62	1	2.04
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*22	10.09	15	8.77	5	12.82	15	9.31	5	10.20

TABLE XXVI

IF TWO COURSES OF THE SAME DURATION IN GENERAL BIOLOGY ARE OFFERED
BY AN INSTITUTION THEY SHOULD VARY IN:

Alternatives	Totals		Two-Year		Four-Year		Public		Private		
	%	R	%	R	%	R	%	R	%	R	
A. Theory content.											
Instructor	2.18	3	1.37	3	1.75	0	.00	3	1.86	0	.00
		*3	1.37	3	1.75	0	.00	3	1.86	0	.00
B. laboratory content.											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	5.10	7	3.21	7	4.09	0	.00	5	3.10	2	4.08
NSF	3.57	1	.45	0	.00	1	2.56	0	.00	1	2.04
		*9	4.12	7	4.09	2	5.12	6	3.72	3	6.12
C. both theory and lab content.											
President	33.33	6	2.75	6	3.50	0	.00	5	3.10	1	2.04
Chairman	37.03	10	4.58	0	.00	10	25.64	8	4.96	2	4.08
Instructor	37.95	52	23.85	52	30.40	0	.00	44	27.32	8	16.32
NSF	35.71	10	4.58	7	4.09	3	7.69	7	4.34	3	6.12
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*81	37.15	65	38.01	13	33.33	64	39.75	14	28.57
D. emphasis only, with content basically the same.											
President	61.11	11	5.04	11	6.43	0	.00	8	4.96	3	6.12
Chairman	48.15	13	5.96	0	.00	13	33.33	10	6.21	3	6.12
Instructor	41.60	57	26.14	57	33.33	0	.00	46	28.57	11	22.44
NSF	57.14	16	7.33	9	5.26	7	17.94	11	6.83	5	10.20
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*99	45.41	77	45.02	20	51.28	75	46.58	22	44.89

TABLE XXVI (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
No Answer											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Chairman	11.11	3	1.37	0	.00	3	7.69	2	1.24	1	2.04
Instructor	13.13	18	8.25	18	10.52	0	.00	11	6.83	7	14.28
NSF	3.57	1	.45	0	.00	1	2.56	0	.00	1	2.04
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*26	11.92	19	11.11	4	10.25	13	8.07	10	20.40

TABLE XXVII

A GENERAL BIOLOGY COURSE FOR LIBERAL ARTS OR GENERAL
EDUCATION MAJORS SHOULD CONTAIN:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Materials usually covered in General Zoology and General Botany.											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	7.29	10	4.58	10	5.84	0	.00	6	3.72	4	8.16
		*13	5.96	12	7.01	1	2.56	9	5.59	4	8.16
B. Materials on plants, animals & humans.											
President	16.66	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	11.67	16	7.33	16	9.35	0	.00	12	7.45	4	8.16
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
		*21	9.63	20	11.69	1	2.56	17	10.55	4	8.16
C. An integrated course where plants, animals & humans are used only as examples to demonstrate a process, function or structure as well as the chemical & physical aspects of life.											
President	55.55	10	4.58	10	5.84	0	.00	6	3.72	4	8.16
Chairman	81.48	22	10.09	0	.00	22	56.41	17	10.55	5	10.20
Instructor	56.93	78	35.77	78	45.61	0	.00	60	37.26	8	36.73
NSF	67.85	19	8.71	11	6.43	8	20.51	13	8.07	6	12.24
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*134	61.46	99	57.89	30	76.92	96	59.62	33	67.34

TABLE XXVII (Continued)

Alternatives	Totals		Two-Year		Four-Year		Public		Private		
	%	R	%	R	%	R	%	R	%	R	
D. Those materials of Botany, Zoology, Physiology and Anatomy that deal most directly with the human implications.											
President	11.11	2	.91	2	1.16	0	.00	1	.62	1	2.04
Chairman	11.11	3	1.37	0	.00	3	7.69	2	1.24	1	2.04
Instructor	21.89	30	13.76	30	17.54	0	.00	29	18.01	1	2.04
NSF	10.71	3	1.37	1	.58	2	5.12	1	.62	2	4.08
		*38	17.43	33	19.29	5	12.82	33	20.49	5	10.20
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Instructor	2.18	3	1.37	3	1.75	0	.00	2	1.24	1	2.04
NSF	17.85	5	2.29	3	1.75	2	5.12	3	1.86	2	4.08
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*12	5.50	7	4.09	2	5.12	6	3.72	3	6.12

TABLE XXVIII

A GENERAL BIOLOGY COURSE FOR BIOLOGY MAJORS SHOULD CONTAIN:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Materials usually covered in General Zoology and General Botany.											
President	27.77	5	2.29	5	2.92	0	.00	3	1.86	2	4.08
Chairman	18.51	5	2.29	0	.00	5	12.82	5	3.10	0	.00
Instructor	24.05	33	15.13	33	19.29	0	.00	26	16.14	7	14.28
NSF	14.28	4	1.83	4	2.33	0	.00	4	2.48	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*48	22.01	42	24.56	5	12.82	38	23.60	9	18.36
B. Materials on plants, animals & humans.											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	5.10	7	3.21	7	4.09	0	.00	7	4.34	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*11	5.04	9	5.26	1	2.56	10	6.21	0	.00
C. An integrated course where plants, animals & humans are used only as examples to demonstrate a process, function or structure.											
President	50.00	9	4.12	9	5.26	0	.00	7	4.34	2	4.08
Chairman	74.07	20	9.17	0	.00	20	51.28	14	8.69	6	12.24
Instructor	58.39	80	36.69	80	46.78	0	.00	60	37.26	20	40.81
NSF	67.85	19	8.71	10	5.84	9	23.07	11	6.83	8	16.32
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*129	59.17	99	57.89	29	74.35	92	57.14	36	73.46

TABLE XXVIII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
D. Those materials of Botany, Zoology, Physiology and Anatomy that deal most directly with the human implications.											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Instructor	2.91	4	1.83	4	2.33	0	.00	4	2.48	0	.00
NSF	3.57	1	.45	0	.00	1	2.56	0	.00	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*7	3.21	5	2.92	1	2.56	4	2.48	2	4.08
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	9.48	13	5.96	13	7.60	0	.00	12	7.45	1	2.04
NSF	14.28	4	1.83	2	1.16	2	5.12	3	1.86	1	2.04
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*23	10.55	16	9.35	3	7.69	17	10.55	2	4.08

TABLE XXIX

GENERAL ZOOLOGY OF ONE YEARS DURATION SHOULD BE THE PREREQUISITE FOR
ALL OTHER ZOOLOGY COURSES IN THE UNDERGRADUATE CURRICULUM.

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. yes.											
President	55.55	10	4.58	10	5.84	0	.00	7	4.34	3	6.12
Chairman	33.33	9	4.12	0	.00	9	23.07	6	3.72	3	6.12
Instructor	39.41	54	24.77	54	31.57	0	.00	49	30.43	5	10.20
NSF	32.14	9	4.12	5	2.92	4	10.25	6	3.72	3	6.12
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*86	39.44	69	40.35	13	33.33	68	42.23	14	28.57
B. no.											
President	44.44	8	3.66	8	4.67	0	.00	6	3.72	2	4.08
Chairman	55.55	15	6.88	0	.00	15	38.46	13	8.07	2	4.08
Instructor	58.39	80	36.69	80	46.78	0	.00	57	35.40	23	46.93
NSF	67.85	19	8.71	11	6.43	8	20.51	12	7.45	7	14.28
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*125	57.33	99	57.89	23	58.97	88	54.65	34	69.38
No Answer											
Chairman	11.11	3	1.37	0	.00	3	7.69	2	1.24	1	2.04
Instructor	2.18	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*7	3.21	3	1.75	3	7.69	5	3.10	1	2.04

TABLE XXX

DURING THE FRESHMAN YEAR A LIFE SCIENCE MAJOR SHOULD BE ENCOURAGED TO TAKE:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. an introductory biology course along with mathematics and/or chemistry.											
President	72.22	13	5.96	13	7.60	0	.00	9	5.59	4	8.16
Chairman	55.55	15	6.88	0	.00	15	38.46	12	7.45	3	6.12
Instructor	71.53	98	44.95	98	57.30	0	.00	81	50.31	17	34.69
NSF	64.28	18	8.25	11	6.43	7	17.94	12	7.45	6	12.24
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*149	68.34	122	71.34	22	56.41	114	70.80	30	61.22
B. mathematics and chemistry as a freshman preparatory to the first life science course in the soph. year.											
President	22.22	4	1.83	4	2.33	0	.00	3	1.86	1	2.04
Chairman	37.03	10	4.58	0	.00	10	25.64	7	4.34	3	6.12
Instructor	24.81	34	15.59	34	19.88	0	.00	23	14.28	11	22.44
NSF	32.14	9	4.12	5	2.92	4	10.25	6	3.72	3	6.12
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*59	27.06	43	25.14	14	35.89	39	24.22	18	36.73
C. defer life science courses until the junior year and furnish the physical science and mathematics requirements for that major.											
	.00	0	.00	0	.00	0	.00	0	.00	0	.00
		*0	.00	0	.00	0	.00	0	.00	0	.00

TABLE XXX (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	3.64	5	2.29	5	2.92	0	.00	5	3.10	0	.00
NSF	3.57	1	.45	0	.00	1	2.56	0	.00	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*10	4.58	6	3.50	3	7.69	8	4.96	1	2.04

TABLE XXXI

WHICH OF THE FOLLOWING PHYSICAL SCIENCE AND MATHEMATICS PROGRAMS SHOULD YOU REQUIRE
OF A LIFE SCIENCE MAJOR IN THE 13TH AND 14TH YEAR?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Inorganic Chemistry											
President	94.44	17	7.79	17	9.94	0	.00	12	7.45	5	10.20
Chairman	92.59	25	11.46	0	.00	25	64.10	19	11.80	6	12.24
Instructor	88.32	121	55.50	121	70.76	0	.00	96	59.62	25	51.02
NSF	89.28	25	11.46	15	8.77	10	25.64	17	10.55	8	16.32
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*193	88.53	153	89.47	35	89.74	144	89.44	44	89.79
B. Organic Chemistry											
President	61.11	11	5.04	11	6.43	0	.00	8	4.96	3	6.12
Chairman	62.96	17	7.79	0	.00	14	35.89	14	8.69	3	6.12
Instructor	75.18	103	47.24	103	60.23	0	.00	87	54.03	16	32.65
NSF	64.28	18	8.25	11	6.43	7	17.94	12	7.45	6	12.24
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*154	70.64	125	73.09	21	53.84	121	75.15	28	57.14
C. Biochemistry											
President	11.11	2	.91	2	1.16	0	.00	1	.62	1	2.04
Chairman	7.04	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	13.86	19	8.71	19	11.11	0	.00	13	8.07	6	12.24
NSF	3.57	1	.45	0	.00	1	2.56	1	.62	0	.00
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*26	11.92	21	12.28	3	7.69	17	10.55	7	14.28
D. Mathematics through Calculus											
President	55.55	10	4.58	10	5.84	0	.00	8	4.96	2	4.08
Chairman	77.77	21	9.63	0	.00	21	53.84	15	9.31	6	12.24
Instructor	68.61	94	43.11	94	54.97	0	.00	74	45.96	20	40.81
NSF	64.28	18	8.25	10	5.84	8	20.51	10	6.21	8	16.32
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*127	58.25	114	66.66	29	74.35	107	66.45	36	73.46

TABLE XXXI (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
E. Probability and Statistics											
President	11.11	2	.91	2	1.16	0	.00	0	.00	2	4.08
Chairman	11.11	3	1.37	0	.00	3	7.69	2	1.24	1	2.04
Instructor	11.67	16	7.33	16	9.35	0	.00	14	8.69	2	4.08
NSF	7.14	2	.91	1	.58	1	2.56	2	1.24	0	.00
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*25	11.46	19	11.11	4	10.25	18	11.18	5	10.20
F. General Physics											
President	72.22	13	5.96	13	7.60	0	.00	11	6.83	2	4.08
Chairman	62.96	17	7.79	0	.00	17	43.58	14	8.69	3	6.12
Instructor	59.12	81	37.15	81	47.36	0	.00	70	43.47	11	22.44
NSF	53.57	15	6.88	11	6.43	4	10.25	10	6.21	5	10.20
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*129	59.17	105	61.40	21	53.84	105	65.21	21	42.85
G. Geology											
President	16.66	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Chairman	14.81	4	1.83	0	.00	4	10.25	3	1.86	1	2.04
Instructor	16.05	22	10.09	22	12.86	0	.00	21	13.04	1	2.04
NSF	10.71	3	1.37	3	1.75	0	.00	2	1.24	2	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*33	15.13	28	16.37	4	10.25	29	18.01	3	6.12
No Answer											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	2.18	3	1.37	3	1.75	0	.00	3	1.86	0	.00
NSF	10.71	3	1.37	1	.58	2	5.12	1	.62	2	4.08
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*9	4.12	4	2.33	3	7.69	5	3.10	2	4.08

TABLE XXXIIA

WHICH LISTED COURSES SHOULD NOT BE TAUGHT IN THE
COMMUNITY JUNIOR COLLEGE
(Total Responses)

	General Biology One Semester		General Biology One Year		General Zoology One Semester		General Zoology One Year		General Botany One Semester		General Botany One Year		Anat.-Physiol. One Semester		Anat.-Physiol. One Year		Human Anatomy		Human Physiology		Comparative Anatomy	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%
President	3	1.37	2	.91	1	.46	3	1.37	1	.46	3	1.37	3	1.37	4	1.83	3	1.37	3	1.37	2	.91
Chairman	4	1.83	0	.00	4	1.83	6	2.75	3	1.37	6	2.75	6	2.75	8	3.67	10	4.59	10	4.59	7	3.21
Instructor	18	8.25	9	4.13	15	6.88	36	16.51	13	5.96	36	16.51	22	10.09	25	11.47	37	16.97	32	14.68	20	9.17
NSF	3	1.37	1	.46	0	.00	6	2.75	0	.00	6	2.75	0	.00	4	1.83	4	1.83	4	1.83	7	3.21
Specialist	0	.00	0	.00	1	.46	1	.46	1	.46	1	.46	0	.00	0	.00	0	.00	0	.00	2	.91
	*28	12.84	12	5.50	21	9.63	52	23.85	18	8.25	52	23.85	31	14.22	41	18.81	54	24.77	49	22.47	38	17.43

	Invertebrate Zoology		Vertebrate Zoology		Comp. Animal Physiology		Vertebrate Embryology		Genetics		Ornithology		Entomology		Histology		Ecology		Evolution		Nature Study	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%
President	5	2.29	3	1.37	10	4.59	9	4.13	4	1.83	6	2.75	6	2.75	8	3.67	5	2.29	6	2.75	0	.00
Chairman	10	4.59	7	3.21	19	8.71	14	6.42	5	2.29	8	3.67	7	3.21	15	6.88	10	4.59	7	3.21	3	1.37
Instructor	32	14.68	28	12.84	75	34.40	75	34.40	27	12.38	67	30.73	52	23.85	70	32.11	41	18.81	49	22.48	20	9.17
NSF	7	3.21	6	2.75	13	5.96	17	7.79	6	2.75	17	7.79	18	8.25	17	7.79	7	3.21	13	5.96	1	.46
Specialist	2	.91	2	.91	2	.91	3	1.37	0	.00	3	1.37	2	.91	3	1.37	2	.91	1	.46	0	.00
	* 56	25.68	46	21.10	119	54.58	118	54.12	42	19.26	101	46.33	85	38.99	113	51.83	65	29.81	76	34.86	24	11.00

TABLE XXXIIB

WHICH LISTED COURSES SHOULD NOT BE TAUGHT IN THE
COMMUNITY JUNIOR COLLEGE
(Responses by Groups)

	General Biology One Semester		General Biology One Year		General Zoology One Semester		General Zoology One Year		General Botany One Semester		General Botany One Year		Anat.-Physiol. One Semester		Anat.-Physiol. One Year		Human Anatomy		Human Physiology		Comparative Anatomy	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%
President	3	16.67	2	11.11	1	5.55	3	16.67	1	5.55	3	16.67	3	16.67	4	22.22	3	16.67	3	16.67	2	11.11
Chairman	4	14.81	0	.00	4	14.81	6	22.22	3	11.11	6	22.22	6	22.22	8	29.63	10	37.04	10	37.04	7	25.93
Instructor	18	13.14	9	6.57	15	10.95	36	26.28	13	9.49	36	26.28	22	16.06	25	18.25	37	27.00	32	23.36	20	14.60
NSF	3	10.71	1	3.57	0	.00	6	21.43	0	.00	6	21.43	0	.00	4	14.28	4	14.28	4	14.28	7	25.00
Specialist	0	.00	0	.00	1	12.50	1	12.50	1	12.50	1	12.50	0	.00	0	.00	0	.00	0	.00	2	25.00

	Invertebrate Zoology		Vertebrate Zoology		Comp. Animal Physiology		Vertebrate Embryology		Genetics		Ornithology		Entomology		Histology		Ecology		Evolution		Nature Study	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%
President	5	27.78	3	16.67	10	55.55	9	50.00	4	22.22	6	33.33	6	33.33	8	44.44	5	27.78	6	33.33	0	.00
Chairman	10	37.04	7	25.93	19	70.37	14	51.85	5	18.52	8	29.63	7	25.93	15	55.55	10	37.04	7	25.93	3	11.11
Instructor	32	23.36	28	20.44	75	54.75	75	54.75	27	19.71	67	48.90	52	37.96	70	51.09	41	29.93	49	35.77	20	14.60
NSF	7	25.00	6	21.43	13	46.43	17	60.71	6	21.43	17	60.71	18	64.28	17	60.71	7	25.00	13	46.43	1	3.57
Specialist	2	25.00	2	25.00	2	25.00	3	37.50	0	.00	3	37.50	2	25.00	3	37.50	2	25.00	1	12.50	0	.00

TABLE XXXIIC

WHICH LISTED COURSES SHOULD NOT BE TAUGHT IN THE
COMMUNITY JUNIOR COLLEGE
(Two-year Schools).

	General Biology One Semester		General Biology One Year		General Zoology One Semester		General Zoology One Year		General Botany One Semester		General Botany One Year		Anat.-Physiol. One Semester		Anat.-Physiol. One Year		Human Anatomy		Human Physiology		Comparative Anatomy	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%
President	3	1.75	2	1.17	1	.58	3	1.75	1	.58	3	1.75	3	1.75	4	2.34	3	1.75	3	1.75	2	1.17
Instructor	18	10.53	9	5.26	15	8.77	36	21.05	13	7.60	36	21.05	22	12.86	25	14.62	37	21.64	32	18.71	20	11.69
NSF	2	1.17	1	.58	0	.00	4	2.34	0	.00	4	2.34	0	.00	3	1.75	1	.58	1	.58	3	1.75
	*23	13.45	12	7.01	16	9.35	43	25.14	14	8.18	43	25.14	25	14.62	32	18.71	41	23.97	36	21.05	25	14.62
	Invertebrate Zoology		Vertebrate Zoology		Comp. Animal Physiology		Vertebrate Embryology		Genetics		Ornithology		Entomology		Histology		Ecology		Evolution		Nature Study	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%
President	5	2.92	3	1.75	10	5.85	9	5.26	4	2.34	6	3.51	6	3.51	8	4.68	5	2.92	6	3.51	0	.00
Instructor	32	18.71	28	16.37	75	43.86	75	43.86	27	15.79	67	39.18	52	30.41	70	40.93	41	23.98	49	28.65	20	11.69
NSF	5	2.92	4	2.34	9	5.26	9	5.26	4	2.34	10	5.85	10	5.85	8	4.68	3	1.75	5	2.92	0	.00
	*42	24.56	35	20.46	94	54.97	93	54.38	35	20.47	83	48.54	68	39.77	86	50.29	49	28.65	60	35.08	20	11.69

TABLE XXXIID

WHICH LISTED COURSES SHOULD NOT BE TAUGHT IN THE
COMMUNITY JUNIOR COLLEGE.
(Four-year Schools)

	General Biology One Semester		General Biology One Year		General Zoology One Semester		General Zoology One Year		General Botany One Semester		General Botany One Year		Anat.-Physiol. One Semester		Anat.-Physiol. One Year		Human Anatomy		Human Physiology		Comparative Anatomy	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%
Chairman NSF	4	10.26	0	.00	4	10.26	6	15.38	3	7.69	6	15.38	6	15.38	8	20.51	10	25.64	10	25.64	7	17.95
	1	2.56	0	.00	0	.00	2	5.13	0	.00	2	5.13	0	.00	1	2.56	3	7.69	3	7.69	4	10.26
	*5	12.82	0	.00	4	10.26	8	20.51	3	7.69	8	20.51	6	15.38	9	23.08	13	33.33	13	33.33	11	28.21
	Invertebrate Zoology		Vertebrate Zoology		Comp. Animal Physiology		Vertebrate Embryology		Genetics		Ornithology		Entomology		Histology		Ecology		Evolution		Nature Study	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%
Chairman NSF	10	25.64	7	17.95	19	48.72	14	35.89	5	12.82	8	20.51	7	17.95	15	38.46	10	25.64	7	17.95	3	7.69
	2	5.13	2	5.13	4	10.26	8	20.51	2	5.13	7	17.95	8	20.51	9	23.08	4	10.26	8	20.51	1	2.56
	*12	30.77	9	23.08	23	58.98	22	56.40	7	17.95	15	38.46	15	38.46	24	61.54	14	35.90	15	38.46	4	10.26

TABLE XXXIII

A GENERAL ZOOLOGY SURVEY COURSE OF ONE SEMESTER DURATION SHOULD
BE SUFFICIENT TO MEET THE NEEDS OF A ZOOLOGY MAJOR.

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. yes.											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Instructor	20.43	28	12.84	28	16.37	0	.00	22	13.66	6	12.24
NSF	10.71	3	1.37	3	1.75	0	.00	1	.62	2	4.08
		*33	15.13	33	19.29	0	.00	25	15.52	8	16.32
B. no.											
President	55.55	10	4.58	10	5.84	0	.00	7	4.34	3	6.12
Chairman	48.15	13	5.96	0	.00	13	33.33	9	5.59	4	8.16
Instructor	40.87	56	25.68	56	32.74	0	.00	46	28.57	10	20.40
NSF	50.00	14	6.42	10	5.84	4	10.25	12	7.45	2	4.08
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*95	43.57	76	44.44	17	43.58	74	45.96	19	38.77
C. yes, if combined with a General Biology survey course.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	14.81	4	1.83	0	.00	4	10.25	3	1.86	1	2.04
Instructor	14.59	20	9.17	20	11.69	0	.00	17	10.55	3	6.12
NSF	14.28	4	1.83	0	.00	4	10.25	0	.00	4	8.16
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*31	14.22	21	12.28	8	20.51	21	13.04	8	16.32
D. yes, if combined with a Gen. Botany survey course.											
President	27.77	5	2.29	5	2.92	0	.00	3	1.86	2	4.08
Chairman	29.62	8	3.66	0	.00	8	20.51	8	4.96	0	.00
Instructor	23.35	32	14.67	32	18.71	0	.00	24	14.90	8	16.32
NSF	10.71	3	1.37	1	.58	2	5.12	1	.62	2	4.08
		*48	22.01	38	22.22	10	25.64	36	22.36	12	24.48

TABLE XXXIII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
No Answer											
Chairman	11.11	2	.91	0	.00	2	5.12	1	.62	1	2.04
Instructor	.72	1	.45	1	.58	0	.00	0	.00	1	2.04
NSF	14.28	4	1.83	2	1.16	2	5.12	4	2.48	0	.00
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*11	5.04	3	1.75	4	10.25	5	3.10	2	4.08

TABLE XXXIV

OFFERING MORE THAN ONE KIND OF GENERAL ZOOLOGY COURSE AT AN INSTITUTION
CAN BE JUSTIFIED IN ORDER TO SERVE:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Zoology majors and pre-medical students.											
President	11.11	2	.91	2	1.16	0	.00	0	.00	2	4.08
Chairman	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Instructor	13.13	18	8.25	18	10.52	0	.00	15	9.31	3	6.12
NSF	3.57	1	.45	0	.00	1	2.56	1	.62	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*22	10.09	20	11.69	1	2.56	16	9.93	5	10.20
B. Zoology majors and non-life science majors.											
President	11.11	2	.91	2	1.16	0	.00	1	.62	1	2.04
Chairman	18.51	5	2.29	0	.00	5	12.82	2	1.24	3	6.12
Instructor	8.75	12	5.50	12	7.01	0	.00	12	7.45	0	.00
NSF	28.57	8	3.66	5	2.92	3	7.69	5	3.10	3	6.12
Specialist	.00	0	.00	0	.00	0	.00	0	.00	0	.00
		*27	12.38	19	11.11	8	20.51	20	12.42	7	14.28
C. Zoology majors and night school students.											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Chairman	3.70	1	.45	0	.00	1	2.56	0	.00	1	2.04
Instructor	.00	0	.00	0	.00	0	.00	0	.00	0	.00
NSF	3.57	1	.45	1	.58	0	.00	0	.00	1	2.04
Specialist	.00	0	.00	0	.00	0	.00	0	.00	0	.00
		*3	1.37	2	1.16	1	2.56	0	.00	3	6.12
D. Zoology majors and all other students.											
President	22.22	4	1.83	4	2.33	0	.00	3	1.86	1	2.04

TABLE XXXIV (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
Chairman	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Instructor	17.51	24	11.00	24	14.03	0	.00	18	11.18	6	12.24
NSF	21.42	6	2.75	4	2.33	2	5.12	6	3.72	0	.00
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*36	16.51	32	18.71	2	5.12	27	16.77	7	14.28
E. Cannot be justified.											
President	61.11	11	5.04	11	6.43	0	.00	8	4.96	3	6.12
Chairman	81.48	22	10.09	0	.00	22	56.41	19	11.80	3	6.12
Instructor	59.85	82	37.61	82	47.95	0	.00	62	38.50	20	40.81
NSF	53.57	15	6.88	9	5.26	6	15.38	8	4.96	7	14.28
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*135	61.92	102	59.64	28	71.79	97	60.24	33	67.34
No Answer											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Chairman	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Instructor	3.64	5	2.29	5	2.92	0	.00	5	3.10	0	.00
NSF	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Specialist	.00	0	.00	0	.00	0	.00	0	.00	0	.00
		*6	2.75	6	3.50	0	.00	5	3.10	1	2.04

TABLE XXXV

IF A "CORE CURRICULUM" IN THE LIFE SCIENCES IS DEVELOPED BY ONE OR MORE SENIOR COLLEGES, TO WHICH A MAJORITY OF YOUR MAJORS TRANSFER, YOUR INSTITUTION SHOULD:

Alternatives	Totals		Two-Year		Four-Year		Public		Private		
	%	R	%	R	%	R	%	R	%	R	
A. try to offer the same "core".											
President	50.00	9	4.12	9	5.26	0	.00	7	4.34	2	4.08
Chairman	33.33	9	4.12	0	.00	9	23.07	6	3.72	3	6.12
Instructor	41.60	57	26.14	57	33.33	0	.00	46	28.57	11	22.44
NSF	28.57	8	3.67	5	2.92	3	7.69	5	3.10	3	6.12
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*85	38.99	71	41.52	12	30.77	64	39.75	19	38.77
B. offer only the introductory biology, chemistry, physics and mathematics for the 13th and 14th year.											
President	27.77	5	2.29	5	2.92	0	.00	3	1.86	2	4.08
Chairman	40.74	11	5.04	0	.00	11	28.20	9	5.59	2	4.08
Instructor	42.33	58	26.60	58	33.91	0	.00	46	28.57	12	24.48
NSF	42.85	12	5.50	8	4.67	4	10.25	9	5.59	3	6.12
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*88	40.36	71	41.52	15	38.46	67	41.61	19	38.77
C. offer only the physical science and mathematics prerequisite to the "core".											
Instructor	1.45	2	.91	2	1.17	0	.00	1	.62	1	2.04
		*2	.91	2	1.17	0	.00	1	.62	1	2.04
No Answer											
President	22.22	4	1.83	4	2.34	0	.00	3	1.86	1	2.04

TABLE XXXV (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
Chairman	25.92	7	3.21	0	.00	7	17.94	6	3.72	1	2.04
Instructor	14.59	20	9.17	20	11.69	0	.00	16	9.93	4	8.16
NSF	28.57	8	3.67	3	1.75	5	12.82	4	2.48	4	8.16
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*43	19.72	27	15.79	12	30.77	29	18.01	10	20.44

TABLE XXXVI

HOW CLOSELY SHOULD THE LIFE SCIENCE CURRICULUM OF A COMMUNITY JUNIOR COLLEGE ADHERE TO THAT OF THE SENIOR COLLEGE OR COLLEGES TO WHICH THE JUNIOR COLLEGE LIFE SCIENCE MAJOR TRANSFERS?

Alternatives	Totals		Two-Year		Four-Year		Public		Private		
	%	R	%	R	%	R	%	R	%	R	
A. They should adhere very closely if not duplicate the Senior College(s) curriculum.											
President	22.22	4	1.83	4	2.33	0	.00	4	2.48	0	.00
Chairman	29.62	8	3.66	0	.00	8	20.51	6	3.72	2	4.08
Instructor	27.73	38	17.43	38	22.22	0	.00	29	18.01	9	18.36
NSF	17.85	5	2.29	1	.58	4	10.25	3	1.86	2	4.08
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*56	25.68	43	25.14	12	30.76	42	26.08	13	26.53
B. There should be some cooperation with the Senior College, but the Junior College should basically form their own curriculum.											
President	22.22	4	1.83	4	2.33	0	.00	3	1.86	1	2.04
Chairman	22.22	6	2.75	0	.00	6	15.38	5	3.10	1	2.04
Instructor	27.00	37	16.97	37	21.63	0	.00	33	20.49	4	8.16
NSF	25.00	7	3.21	5	2.92	2	5.12	6	3.72	1	2.04
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*58	26.60	46	26.90	8	20.51	47	29.19	7	14.28
C. The Junior College should approach the curriculum with the needs of all of its students in mind.											
President	55.55	10	4.58	10	5.84	0	.00	6	3.72	4	8.16

TABLE XXXVI (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
Chairman	48.14	13	5.96	0	.00	13	33.33	10	6.21	3	6.12
Instructor	43.79	60	27.52	60	35.08	0	.00	45	27.95	15	30.61
NSF	42.85	12	5.50	8	4.67	4	10.25	6	3.72	6	12.24
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*98	44.95	78	45.61	17	43.58	67	41.61	28	57.14
No Answer											
Instructor	1.45	2	.91	2	1.16	0	.00	2	1.24	0	.00
NSF	14.28	4	1.83	2	1.16	2	5.12	3	1.86	1	2.04
		*6	2.75	4	2.32	2	5.12	5	3.10	1	2.04

TABLE XXXVII
HOW MANY SEMESTER HOURS OF LIFE SCIENCE SHOULD BE REQUIRED
FOR AN ASSOCIATE OF ARTS DEGREE?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. None.											
President	16.66	3	1.37	3	1.75	0	.00	1	.62	2	4.08
Instructor	1.45	2	.91	2	1.16	0	.00	2	1.24	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*6	2.75	5	2.92	0	.00	3	1.86	2	4.08
B. Four Hours.											
President	22.22	4	1.83	4	2.33	0	.00	4	2.48	0	.00
Chairman	11.11	3	1.37	0	.00	3	7.69	2	1.24	1	2.04
Instructor	16.05	22	10.09	22	12.86	0	.00	13	8.07	9	18.36
NSF	21.42	6	2.75	5	2.92	1	2.56	5	3.10	1	2.04
		*35	16.05	31	18.12	4	10.25	24	14.90	11	22.44
C. Six Hours.											
President	22.22	4	1.83	4	2.33	0	.00	2	1.24	2	4.08
Chairman	14.81	4	1.83	0	.00	4	10.25	4	2.48	0	.00
Instructor	15.32	21	9.63	21	12.28	0	.00	19	11.80	2	4.08
NSF	21.42	6	2.75	4	2.33	2	5.12	5	3.10	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*36	16.51	29	16.95	6	15.38	30	18.63	5	10.20
D. Eight Hours.											
President	22.22	4	1.83	4	2.33	0	.00	4	2.48	0	.00
Chairman	44.44	12	5.50	0	.00	12	30.76	10	6.21	2	4.08
Instructor	47.44	65	29.81	65	38.01	0	.00	52	32.29	13	26.53
NSF	42.85	12	5.50	6	3.50	6	15.38	6	3.72	6	12.24
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*95	43.57	75	43.85	18	46.15	72	44.72	21	42.85
E. Ten Hours.											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00

TABLE XXXVII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
Instructor	5.83	8	3.66	8	4.67	0	.00	8	4.96	0	.00
		*9	4.12	8	4.67	1	2.56	9	5.59	0	.00
F. Twelve Hours.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	7.29	10	4.58	10	5.84	0	.00	6	3.72	4	8.16
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*13	5.96	11	6.43	1	2.56	8	4.96	4	8.16
G. Fourteen Hours.											
Chairman	7.40	2	.91	0	.00	2	5.12	1	.62	1	2.04
Instructor	1.45	2	.91	2	1.16	0	.00	2	1.24	0	.00
NSF	7.14	2	.91	1	.58	1	2.56	2	1.24	0	.00
		*6	2.75	3	1.75	3	7.69	5	3.10	1	2.04
H. More than fourteen hours.											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	2.91	4	1.83	4	2.33	0	.00	4	2.48	0	.00
		*7	3.23	5	2.92	2	5.12	6	3.72	1	2.04
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	0	.00	2	4.08
Instructor	2.18	3	1.37	3	1.75	0	.00	3	1.86	0	.00
NSF	7.14	2	.91	0	.00	2	5.12	0	.00	2	4.08
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*11	5.04	4	2.33	4	10.25	4	2.48	4	8.16

TABLE XXXVIII

SHOULD A FULL YEARS COURSE COMPOSED OF ONE SEMESTER BIOLOGY SURVEY AND ONE SEMESTER
PHYSICAL SCIENCE SURVEY BE SUFFICIENT TO FULFILL THE SCIENCE
REQUIREMENT FOR LIBERAL ARTS MAJORS:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. yes.											
President	55.55	10	4.58	10	5.84	0	.00	7	4.34	3	6.12
Chairman	44.44	12	5.50	0	.00	12	30.76	9	5.59	3	6.12
Instructor	61.31	84	38.53	84	49.12	0	.00	71	44.04	13	26.53
NSF	39.28	11	5.04	8	4.67	3	7.69	7	4.34	4	8.16
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*120	55.04	102	59.64	15	38.46	94	58.38	23	46.93
B. no.											
President	44.44	8	3.66	8	4.67	0	.00	6	3.72	2	4.08
Chairman	51.85	14	6.42	0	.00	14	35.89	11	6.83	3	6.12
Instructor	38.68	53	24.31	53	30.99	0	.00	38	23.60	15	30.61
NSF	57.14	16	7.33	8	4.67	8	20.51	11	6.83	5	10.20
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*94	43.11	69	40.35	22	56.41	66	40.99	25	51.02
No Answer											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
NSF	3.57	1	.45	0	.00	1	2.56	0	.00	1	2.04
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*4	1.83	0	.00	2	5.12	1	.62	1	2.04

TABLE XXXIX

SHOULD A LIBERAL ARTS MAJOR OR GENERAL EDUCATION STUDENT WHO POSSESSES
THE PROPER PREREQUISITES BE ALLOWED TO TAKE ANY BIOLOGY COURSES
OFFERED AT THE INSTITUTION AS A FULFILLMENT OF ELECTIVE CREDITS :

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. yes.											
President	72.22	13	5.96	13	7.60	0	.00	10	6.21	3	6.12
Chairman	92.59	25	11.46	0	.00	25	64.10	19	11.80	6	12.24
Instructor	90.51	124	56.88	124	56.88	0	.00	97	60.24	27	55.10
NSF	85.71	24	11.00	14	8.18	10	25.64	17	10.55	7	14.28
Specialist	75.00	6	2.75	0	.00	0	.00	0	.00	0	.00
		*192	88.07	151	88.30	35	89.74	143	88.81	43	87.75
B. no.											
President	16.66	3	1.37	3	1.75	0	.00	2	1.24	1	2.04
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	5.83	8	3.66	8	4.67	0	.00	8	4.96	0	.00
NSF	7.14	2	.91	1	.58	1	2.56	1	.62	1	2.04
		*14	6.42	12	7.01	2	5.12	12	7.45	2	4.08
No Answer											
President	11.11	2	.91	2	1.16	0	.00	1	.62	1	2.04
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	3.64	5	2.29	5	2.92	0	.00	4	2.48	1	2.04
NSF	7.14	2	.91	1	.58	1	2.56	0	.00	2	4.08
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*12	5.50	8	4.67	2	5.12	6	3.72	4	8.16

TABLE XL

GENERAL ZOOLOGY OF ONE SEMESTER DURATION SHOULD BE MORE APPROPRIATE TO
FULFILL THE LIFE SCIENCE REQUIREMENT OF THE LIBERAL ARTS
MAJOR THAN GENERAL BOTANY OF THE SAME DURATION.

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. yes.											
President	33.33	6	2.75	6	3.50	0	.00	5	3.10	1	2.04
Chairman	25.92	7	3.21	0	.00	7	17.94	5	3.10	2	4.08
Instructor	22.62	31	14.22	31	18.12	0	.00	24	14.90	7	14.28
NSF	28.57	8	3.66	1	.58	7	17.94	4	2.48	4	8.16
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*53	24.31	38	22.22	14	35.89	38	23.60	14	28.57
B. no.											
President	66.66	12	5.50	12	7.01	0	.00	8	4.96	4	8.16
Chairman	62.96	17	7.79	0	.00	17	43.58	14	8.69	3	6.12
Instructor	73.72	101	46.33	101	59.06	0	.00	81	50.31	20	40.81
NSF	67.85	19	8.71	14	8.18	5	12.82	13	8.07	6	12.24
Specialist	75.00	6	2.75	0	.00	0	.00	0	.00	0	.00
		*155	71.10	127	74.26	22	56.41	116	72.04	33	67.34
No Answer											
Chairman	11.11	3	1.37	0	.00	3	7.69	2	1.24	1	2.04
Instructor	3.64	5	2.29	5	2.92	0	.00	4	2.48	1	2.04
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*10	4.58	6	3.50	3	7.69	7	4.34	2	4.08

TABLE XLI

TO MEET THE GENERAL EDUCATION NEEDS OF THE TERMINAL STUDENT,
GENERAL ZOOLOGY OR GENERAL BOTANY SHOULD:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. be offered for one semester each.											
President	44.44	8	3.67	8	4.67	0	.00	4	2.48	4	8.16
Chairman	40.74	11	5.04	0	.00	11	28.20	9	5.59	2	4.08
Instructor	45.98	63	28.90	63	36.84	0	.00	48	29.81	15	30.61
NSF	42.85	12	5.50	9	5.26	3	7.69	7	4.34	5	10.20
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*97	44.49	80	46.78	14	35.89	68	42.23	26	53.06
B. be offered for one year each.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	14.81	4	1.83	0	.00	4	10.25	3	1.68	1	2.04
Instructor	6.56	9	4.12	9	5.26	0	.00	6	3.72	3	6.12
NSF	7.14	2	.91	0	.00	2	5.12	1	.62	1	2.04
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*18	8.25	10	5.84	6	15.38	11	6.83	5	10.20
C. not be offered for this group.											
President	50.00	9	4.12	9	5.26	0	.00	8	4.96	1	2.04
Chairman	44.44	12	5.50	0	.00	12	30.77	9	5.59	3	6.12
Instructor	46.71	64	29.35	64	37.42	0	.00	55	34.16	9	18.36
NSF	50.00	14	6.42	7	4.09	7	17.94	10	6.21	4	8.16
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*102	46.79	80	46.78	19	48.71	82	50.93	17	34.69
No Answer											
Instructor	.72	1	.45	1	.58	0	.00	0	.00	1	2.04
		*1	.45	1	.58	0	.00	0	.00	1	2.04

TABLE XLII

SHOULD SPECIAL LIFE SCIENCE COURSES BE STRUCTURED FOR THOSE LIFE SCIENCE ORIENTED STUDENTS (i.e. NURSING, LABORATORY TECHNICIAN, MEDICAL LIBRARIAN) WHEN A TRADITIONAL COURSE IN THE SAME AREA IS PROVIDED IN THE CURRICULUM?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. yes.											
President	27.77	5	2.29	5	2.92	0	.00	4	2.48	1	2.04
Chairman	14.81	4	1.83	0	.00	4	10.25	3	1.86	1	2.04
Instructor	39.41	54	24.77	54	31.57	0	.00	49	30.43	5	10.20
NSF	32.14	9	4.12	6	3.50	3	7.69	6	3.72	3	6.12
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*77	35.32	65	38.01	7	17.94	62	38.50	10	20.40
B. no.											
President	61.11	11	5.04	11	6.43	0	.00	8	4.96	3	6.12
Chairman	85.18	23	10.55	0	.00	23	58.97	18	11.18	5	10.20
Instructor	56.93	78	35.77	78	45.61	0	.00	56	34.78	22	44.89
NSF	67.85	19	8.71	10	5.84	9	23.07	12	7.45	7	14.28
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*134	61.46	99	57.89	32	82.05	94	58.38	37	75.51
If yes, which one(s) of the following:											
A. General Biology											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Instructor	9.48	13	5.96	13	7.60	0	.00	13	8.07	0	.00
NSF	17.85	5	2.29	4	2.33	1	2.56	5	3.10	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*20	9.17	18	10.52	1	2.56	19	11.80	0	.00
B. Human Anatomy-Physiology											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	1	.62	1	2.04

TABLE XLIII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
Instructor	30.65	42	19.26	42	24.56	0	.00	40	24.84	2	4.08
NSF	17.85	5	2.29	3	1.75	2	5.12	2	1.24	3	6.12
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*53	24.31	47	27.48	4	10.25	45	27.95	6	12.24
C. Histology											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	1	.62	1	2.04
Instructor	13.13	18	8.25	18	10.52	0	.00	18	11.18	0	.00
NSF	10.71	3	1.37	2	1.16	1	2.56	0	.00	3	6.12
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*24	11.00	20	11.69	3	7.69	19	11.80	4	8.16
D. Human Anatomy											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	10.21	14	6.42	14	8.18	0	.00	11	6.83	3	6.12
NSF	7.14	2	.91	2	1.16	0	.00	0	.00	2	4.08
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*22	10.09	18	10.52	2	5.12	15	9.31	5	10.20
E. Human Physiology											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	8.02	11	5.04	11	6.43	0	.00	9	5.59	2	4.08
NSF	7.14	2	.91	2	1.16	0	.00	0	.00	2	4.08
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*19	8.71	15	8.77	2	5.12	13	8.07	4	8.16
No Answer											
President	11.11	2	.91	2	1.16	0	.00	1	.62	1	2.04
Chairman	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Instructor	2.91	4	1.83	4	2.33	0	.00	3	1.86	1	2.04
NSF	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Specialist	.00	0	.00	0	.00	0	.00	0	.00	0	.00
		*6	2.75	6	3.50	0	.00	4	2.48	2	4.08

TABLE XLIII

LABORATORY SESSIONS FOR THE TERMINAL STUDENT
SHOULD BE CONSIDERED AS:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. not essential for this type student.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Instructor	1.45	2	.91	2	1.16	0	.00	2	1.24	0	.00
		*3	1.37	3	1.75	0	.00	3	1.86	0	.00
B. not essential since pertinent materials could be covered in demonstration or audio-visual materials.											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	14.81	4	1.83	0	.00	4	10.25	4	2.48	0	.00
Instructor	4.37	6	2.75	6	3.50	0	.00	6	3.72	0	.00
		*12	5.50	8	4.67	4	10.25	12	7.45	0	.00
C. needed to show a unique phase of science.											
Chairman	7.40	2	.91	0	.00	2	5.12	1	.62	1	2.04
Instructor	5.83	8	3.66	8	4.67	0	.00	8	4.96	0	.00
NSF	10.71	3	1.37	0	.00	3	7.69	0	.00	3	6.12
		*13	5.96	8	4.67	5	12.82	9	5.59	4	8.16
D. an integral part of science teaching regardless of the student being taught.											
President	83.33	15	6.88	15	8.77	0	.00	10	6.21	5	10.20
Chairman	77.77	21	9.63	0	.00	21	53.84	16	9.93	5	10.20
Instructor	85.40	117	53.66	117	68.42	0	.00	90	55.90	27	55.10
NSF	82.14	23	10.55	15	8.77	8	20.51	16	9.93	7	14.28
Specialist	100.00	8	3.66	0	.00	0	.00	0	.00	0	.00
		*184	84.40	147	85.96	29	74.35	132	81.98	44	89.79

TABLE XLIII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
No Answer											
Instructor	2.91	4	1.83	4	2.33	0	.00	3	1.86	1	2.04
NSF	7.14	2	.91	1	.58	1	2.56	2	1.24	0	.00
		*6	2.75	5	2.92	1	2.56	5	3.10	1	2.04

TABLE XLIV

A COURSE IN GENETICS SHOULD BE TAUGHT:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. with a concurrent laboratory.											
President	61.11	11	5.04	11	6.43	0	.00	8	4.96	3	6.12
Chairman	59.25	16	7.33	0	.00	16	41.02	12	7.45	4	8.16
Instructor	62.77	86	39.44	86	50.29	0	.00	65	40.37	21	42.85
NSF	71.42	20	9.17	11	6.43	9	23.07	12	7.45	8	16.32
Specialist	75.00	6	2.75	0	.00	0	.00	0	.00	0	.00
		*139	63.76	108	63.15	25	64.10	97	60.24	36	73.46
B. with an optional laboratory.											
President	22.22	4	1.83	4	2.33	0	.00	2	1.24	2	4.08
Chairman	33.33	9	4.12	0	.00	9	23.07	7	4.34	2	4.08
Instructor	25.54	35	16.05	35	20.46	0	.00	29	18.01	6	12.24
NSF	25.00	7	3.21	4	2.33	3	7.69	5	3.10	2	4.08
		*55	25.22	43	25.14	12	30.76	43	26.70	12	24.48
C. without a laboratory session.											
President	16.66	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	7.29	10	4.58	10	5.84	0	.00	9	5.59	1	2.04
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*16	7.33	14	8.18	1	2.56	14	8.69	1	2.04
No Answer											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	4.37	6	2.75	6	3.50	0	.00	6	3.72	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*8	3.66	6	3.50	1	2.56	7	4.34	0	.00

TABLE XLV

ASSUMING THAT ONE HOUR OF LECTURE PER WEEK PER SEMESTER EQUALS ONE SEMESTER HOUR CREDIT,
 HOW MANY HOURS SHOULD BE SPENT IN LABORATORY TO EQUAL
 ONE SEMESTER HOURS CREDIT?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. One Hour.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	10.21	14	6.42	14	8.18	0	.00	14	8.69	0	.00
NSF	7.14	2	.91	0	.00	2	5.12	0	.00	2	4.08
		*19	8.71	15	8.77	4	10.25	17	10.55	2	4.08
B. Two Hours.											
President	66.66	12	5.50	12	7.01	0	.00	9	5.59	3	6.12
Chairman	37.03	10	4.58	0	.00	10	25.64	8	4.96	2	4.08
Instructor	54.74	75	34.40	75	43.85	0	.00	60	37.26	15	30.61
NSF	57.14	16	7.33	9	5.26	7	17.94	10	6.21	6	12.24
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*118	54.12	96	56.14	17	43.58	87	54.03	26	53.06
C. Three Hours.											
President	22.22	4	1.83	4	2.33	0	.00	3	1.86	1	2.04
Chairman	48.14	13	5.96	0	.00	13	33.33	9	5.59	4	8.16
Instructor	21.16	29	13.30	29	16.95	0	.00	21	13.04	8	16.32
NSF	32.14	9	4.12	6	3.50	3	7.69	7	4.34	2	4.08
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*56	25.68	39	22.80	16	41.02	40	24.84	15	30.61
D. Four Hours.											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	9.48	13	5.96	13	5.96	0	.00	8	4.96	5	10.20
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
		*17	7.79	15	7.60	2	5.12	11	6.83	6	12.24

TABLE XLV (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
E. Five Hours.	.00	0	.00	0	.00	0	.00	0	.00	0	.00
F. Six Hours.	.00	0	.00	0	.00	0	.00	0	.00	0	.00
G. No credit should be given for time in laboratory.	.00	0	.00	0	.00	0	.00	0	.00	0	.00
No Answer											
Instructor	4.37	6	2.75	6	3.50	0	.00	6	3.72	0	.00
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*8	3.66	6	3.50	0	.00	6	3.72	0	.00

TABLE XLVI

THE NUMBER OF HOURS SPENT IN LABORATORY FOR ONE
HOURS CREDIT SHOULD BE THE SAME:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. for both semesters of the same course.											
President	22.22	4	1.83	4	2.33	0	.00	4	2.48	0	.00
Chairman	14.81	4	1.83	0	.00	4	10.25	3	1.86	1	2.04
Instructor	25.54	35	16.05	35	20.46	0	.00	29	18.01	6	12.24
NSF	25.00	7	3.21	4	2.33	3	7.69	2	1.24	5	10.20
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*51	23.39	43	25.14	7	17.94	38	23.60	12	24.48
B. for all life science courses.											
President	16.66	3	1.37	3	1.75	0	.00	2	1.24	1	2.04
Chairman	11.11	3	1.37	0	.00	3	7.69	1	.62	2	4.08
Instructor	10.94	15	6.88	15	8.77	0	.00	14	8.69	1	2.04
NSF	17.85	5	2.29	5	2.92	0	.00	4	2.48	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*27	12.38	23	13.45	3	7.69	21	13.04	5	10.20
C. for all laboratory courses within the school.											
President	16.66	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	19.70	27	12.38	27	15.78	0	.00	15	9.31	12	24.48
NSF	10.71	3	1.37	2	1.16	1	2.56	1	.62	2	4.08
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*39	17.88	32	18.71	3	7.69	21	13.04	14	28.57
D. not necessarily the same for "a", "b" or "c" above.											
President	55.55	10	4.58	10	5.84	0	.00	6	3.72	4	8.16

TABLE XLVI (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
Chairman	77.77	21	9.63	0	.00	21	53.84	17	10.55	4	8.16
Instructor	51.09	70	32.11	70	40.93	0	.00	55	34.16	15	30.61
NSF	60.71	17	7.79	8	4.67	9	23.07	13	8.07	4	8.16
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*121	55.50	88	51.46	30	76.92	91	56.52	27	55.10
No Answer											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Instructor	1.45	2	.91	2	1.16	0	.00	1	.62	1	2.04
NSF	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*3	1.37	2	1.16	0	.00	1	.62	1	2.04

TABLE XLVIII

WHAT IS AN ADEQUATE PERIOD OF TIME TO PROPERLY COVER THE COURSE CONTENT OF EACH OF THE LISTED COURSES IF OFFERED TO NON-BIOLOGY MAJORS.
(Responses of All)

	General Biology		General Zoology		General Botany		Human Anat. and Physiology		Human Anatomy		Human Physiology		Comparative Anatomy		Invertebrate Zoology		Vertebrate Zoology	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%
One Semester																		
President	5	2.29	10	4.58	11	5.04	9	4.12	8	3.66	7	3.21	6	2.75	6	2.75	6	2.75
Chairman	8	3.66	13	5.96	14	6.42	14	6.42	15	6.88	15	6.88	16	7.33	16	7.33	15	6.88
Instructor	45	20.64	93	42.66	94	43.11	73	33.48	89	40.82	88	40.36	86	39.44	87	39.90	86	39.44
NSF	6	2.75	19	8.71	18	8.25	14	6.42	17	7.79	17	7.79	16	7.33	16	7.33	16	7.33
Specialist	3	1.37	1	.45	2	.91	4	1.83	4	1.83	4	1.83	3	1.37	3	1.37	4	1.83
	*67	30.73	136	62.38	139	63.76	114	52.29	133	61.00	131	60.09	127	58.25	128	58.71	127	58.25
One Year																		
President	10	4.58	2	.91	1	.45	1	.45	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	17	7.79	3	1.37	2	.91	4	1.83	1	.45	1	.45	0	.00	0	.00	0	.00
Instructor	90	41.28	17	7.79	15	6.88	29	13.30	2	.91	3	1.37	2	.91	1	.45	1	.45
NSF	22	10.09	2	.91	2	.91	5	2.29	0	.00	0	.00	0	.00	0	.00	0	.00
Specialist	3	1.37	2	.91	1	.45	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
	*142	65.13	26	11.92	21	9.63	39	17.88	3	1.37	4	1.83	2	.91	1	.45	1	.45
No Answer																		
President	3	1.37	6	2.75	6	2.75	8	3.66	10	4.58	11	5.04	12	5.50	12	5.50	12	5.50
Chairman	2	.91	11	5.04	11	5.04	9	4.12	11	5.04	11	5.04	11	5.04	11	5.04	12	5.50
Instructor	2	.91	27	12.38	28	12.84	35	16.05	46	21.10	49	22.47	49	22.47	49	22.47	50	22.93
NSF	2	.91	7	3.21	8	3.66	9	4.12	11	5.04	11	5.04	12	5.50	12	5.50	12	5.50
Specialist	0	.00	5	2.29	5	2.29	4	1.83	4	1.83	4	1.83	5	2.29	2	2.29	4	1.83
	*9	4.12	56	25.68	58	26.60	65	29.81	82	37.61	83	38.07	89	40.82	89	40.82	90	41.28

	Comparative Animal Physiology		Vertebrate Embryology		Genetics		Ornithology		Entomology		Histology		Ecology		Evolution		Nature Study	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%
One Semester																		
President	6	2.75	6	2.75	6	2.75	6	2.75	6	2.75	6	2.75	6	2.75	7	3.21	8	3.66
Chairman	15	6.88	16	7.33	21	9.63	15	6.88	17	7.79	16	7.33	20	9.17	19	8.71	18	8.25
Instructor	82	37.61	84	38.53	93	42.66	88	40.36	89	40.82	87	39.90	86	39.44	90	41.28	96	44.03
NSF	14	6.42	16	7.33	18	8.25	16	7.33	16	7.33	17	7.79	15	6.88	16	7.33	19	8.71
Specialist	3	1.37	3	1.37	5	2.29	3	1.37	3	1.37	3	1.37	4	1.83	5	2.29	5	2.29
	*120	55.04	125	57.33	143	65.59	128	58.71	131	60.09	129	59.17	131	60.09	137	62.84	146	66.97
One Year																		
President	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	1	.45
Instructor	5	2.29	3	1.37	1	.45	1	.45	1	.45	2	.91	9	4.12	0	.00	3	1.37
NSF	1	.45	0	.00	0	.00	0	.00	0	.00	0	.00	1	.45	0	.00	0	.00
Specialist	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00
	*6	2.75	3	1.37	1	.45	1	.45	1	.45	2	.91	10	4.58	0	.00	4	1.83
No Answer																		
President	12	5.50	12	5.50	12	5.50	12	5.50	12	5.50	12	5.50	12	5.50	11	5.04	10	4.58
Chairman	12	5.50	11	5.04	6	2.75	12	5.50	10	4.58	11	5.04	7	3.21	8	3.66	8	3.66
Instructor	50	22.93	50	22.93	43	19.72	48	22.01	47	21.55	48	22.01	42	19.26	47	21.55	38	17.43
NSF	13	5.96	12	5.50	10	4.58	12	5.50	12	5.50	11	5.04	12	5.50	12	5.50	9	4.12
Specialist	5	2.29	5	2.29	3	1.37	5	2.29	5	2.29	5	2.29	4	1.83	3	1.37	3	1.37
	*92	42.20	90	41.28	74	33.94	89	40.82	86	39.44	87	39.90	77	35.32	81	37.15	68	31.19

TABLE LI

A SUMMARY OF THE MAJORITY OPINIONS OF THE RESPONDENTS CONCERNING
CLOCK HOURS OF LECTURE AND LABORATORY PER WEEK AND THE
SEMESTER HOURS CREDIT TO BE AWARDED PER SEMESTER
FOR THE LISTED COURSES.

	Hours of Lecture per Week	Hours of Laboratory per Week	Semester Hours Credit per Course per Semester
Gen. Biol.-One Semester	3	4	4
Gen. Biol.-One Year	3	4	4
Gen. Zool.-One Semester	3	4	4
Gen. Zool.-One Year	3	4	4
Gen. Bot.-One Semester	3	4	4
Gen. Bot. - One Year	3	4	4
Human Anat.-Physiol.-One Semester	3	4	4
Human Anat.-Physiol.-One Year	3	4	4
Human Anatomy	3	4	4
Human Physiology	3	4	4
Comparative Anatomy	3	4	4
Invertebrate Zoology	3	4	4
Vertebrate Zoology	3	4	4
Comp. Animal Physiology	3	4	4
Vertebrate Embryology	3	4	4
Genetics	3	3	4
Ornithology	2	4	4
Entomology	2	4	4
Histology	2	4	4
Ecology	2	4	4
Evolution	3	0	3
Nature Study	2	4	3

TABLE LII

WHAT SHOULD BE THE MINIMUM NUMBER OF SEMESTER HOURS OF ZOOLOGICAL SCIENCE CREDIT OFFERED IN THE 13TH AND 14TH YEARS OF THE COMMUNITY JUNIOR COLLEGE?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Eight Hours.											
President	44.44	8	3.66	8	4.67	0	.00	6	3.72	2	4.08
Chairman	25.92	7	3.21	0	.00	7	17.94	6	3.72	1	2.04
Instructor	32.84	45	20.64	45	26.31	0	.00	36	22.36	9	18.36
NSF	25.00	7	3.21	3	1.75	4	10.25	5	3.10	2	4.08
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*69	31.65	56	32.74	11	28.20	53	32.91	14	28.57
B. Twelve Hours.											
President	22.22	4	1.83	4	2.33	0	.00	3	1.86	1	2.04
Chairman	18.51	5	2.29	0	.00	5	12.82	5	3.10	0	.00
Instructor	16.78	23	10.55	23	13.46	0	.00	14	8.69	9	18.36
NSF	14.28	4	1.83	3	1.75	1	2.56	2	1.24	2	4.08
		*36	16.51	30	17.54	6	15.38	24	14.90	12	24.48
C. Sixteen Hours.											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	29.62	8	3.66	0	.00	8	20.51	6	3.72	2	4.08
Instructor	18.97	26	11.92	26	15.20	0	.00	23	14.28	3	6.12
NSF	32.14	9	4.12	4	2.33	5	12.82	5	3.10	4	8.16
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*46	21.10	32	18.71	13	33.33	36	22.36	9	18.36
D. Twenty Hours.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	14.81	4	1.83	0	.00	4	10.25	3	1.86	1	2.04
Instructor	8.75	12	5.50	12	7.01	0	.00	12	7.45	0	.00
NSF	7.14	2	.91	2	1.16	0	.00	2	1.24	0	.00
		*19	8.71	15	8.77	4	10.25	18	11.18	1	2.04

TABLE LII (Continued)

Alternatives	Totals		Two-Year		Four-Year		Public		Private		
	%	R	%	R	%	R	%	R	%	R	
E. Twenty-Five Hours.											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	5.83	8	3.66	8	4.67	0	.00	6	3.72	2	4.08
NSF	7.14	2	.91	1	.58	1	2.56	2	1.24	0	.00
		*12	5.50	10	5.84	2	5.12	9	5.59	3	6.12
F. Thirty Hours.											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Instructor	4.37	6	2.75	6	3.50	0	.00	4	2.48	2	4.08
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
		*8	3.66	8	4.67	0	.00	5	3.10	3	6.12
G. Thirty-Five Hours.											
Chairman	3.70	1	.45	0	.00	1	2.56	0	.00	1	2.04
		*1	.45	0	.00	1	2.56	0	.00	1	2.04
H. Forty Hours.											
Instructor	1.45	2	.91	2	1.16	0	.00	2	1.24	0	.00
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
		*3	1.37	3	1.75	0	.00	3	1.86	0	.00
I. More than forty hours.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Instructor	2.91	4	1.83	4	2.33	0	.00	4	2.48	0	.00
		*5	2.29	5	2.92	0	.00	5	3.10	0	.00
No Answer											
Chairman	3.70	1	.45	0	.00	1	2.56	0	.00	1	2.04
Instructor	8.02	11	5.04	11	6.43	0	.00	8	4.96	3	6.12
NSF	7.14	2	.91	1	.58	1	2.56	0	.00	2	4.08
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*19	8.71	12	7.01	2	5.12	8	4.96	6	12.24

TABLE LIII

THE TOTAL NUMBER OF SEMESTER HOURS OF CREDIT IN LIFE SCIENCE THAT SHOULD BE REQUIRED IN THE NON-LIFE SCIENCE RELATED TERMINAL CURRICULA IS:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. None.											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	5.83	8	3.66	8	4.67	0	.00	8	4.96	0	.00
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*13	5.96	10	5.84	1	2.56	11	6.83	0	.00
B. 3 semester hours.											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	3.64	5	2.29	5	2.92	0	.00	4	2.48	1	2.04
NSF	7.14	2	.91	1	.58	1	2.56	1	.62	1	2.04
		*10	4.58	7	4.09	3	7.69	7	4.34	3	6.12
C. 4 semester hours.											
President	22.22	4	1.83	4	2.33	0	.00	4	2.48	0	.00
Chairman	40.74	11	5.04	0	.00	11	28.20	8	4.96	3	6.12
Instructor	21.89	30	13.76	30	17.54	0	.00	20	12.42	10	20.40
NSF	42.85	12	5.50	7	4.09	5	12.82	9	5.59	3	6.12
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*58	26.60	41	23.97	16	41.02	41	25.46	16	32.65
D. 5 semester hours.											
President	22.22	4	1.83	4	2.33	0	.00	2	1.24	2	4.08
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	16.78	23	10.55	23	13.45	0	.00	18	11.18	5	10.20
NSF	10.71	3	1.37	1	.58	2	5.12	1	.62	2	4.08
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*32	14.67	28	16.37	3	7.69	22	13.66	9	18.36

TABLE LIII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
E. Should vary with curriculum.											
President	33.33	6	2.75	6	3.50	0	.00	4	2.48	2	4.08
Chairman	37.03	10	4.58	0	.00	10	25.64	8	4.96	2	4.08
Instructor	45.98	63	28.89	63	36.84	0	.00	53	32.91	10	20.40
NSF	35.71	10	4.58	6	3.50	4	10.25	7	4.34	3	6.12
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*93	42.66	75	43.85	14	35.89	72	44.72	17	34.69
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	1	.62	1	2.04
Instructor	5.83	8	3.66	8	4.67	0	.00	6	3.72	2	4.08
NSF	3.57	1	.45	1	.58	0	.00	0	.00	1	2.04
		*12	5.50	10	5.84	2	5.12	8	4.96	4	8.16

TABLE LIV

A SENIOR COLLEGE SHOULD ACCEPT ALL THE CREDITS EARNED BY A STUDENT IN
LIFE SCIENCES IN A REGIONALLY ACCREDITED COMMUNITY JUNIOR COLLEGE.

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. yes, all credits.											
President	22.22	4	1.83	4	2.33	0	.00	4	2.48	0	.00
Chairman	18.51	5	2.29	0	.00	5	12.82	4	2.48	1	2.04
Instructor	13.13	18	8.25	18	10.52	0	.00	15	9.31	3	6.12
NSF	7.14	2	.91	1	.58	1	2.56	0	.00	2	4.08
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*31	14.22	23	13.45	6	15.38	23	14.28	6	12.24
B. yes, if college level courses.											
President	66.66	12	5.50	12	7.01	0	.00	7	4.34	5	10.20
Chairman	62.96	17	7.79	0	.00	17	43.58	13	8.07	4	8.16
Instructor	83.94	115	52.75	115	67.25	0	.00	90	55.90	25	51.02
NSF	89.28	25	11.46	15	8.77	10	25.64	17	10.55	8	16.32
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*174	79.81	142	83.04	27	69.23	127	78.88	42	85.71
C. no.											
President	11.11	2	.91	2	1.16	0	.00	2	1.24	0	.00
Chairman	18.51	5	2.29	0	.00	5	12.82	4	2.48	1	2.04
Instructor	2.91	4	1.83	4	2.33	0	.00	4	2.49	0	.00
NSF	3.57	1	.45	0	.00	1	2.56	1	.62	0	.00
		*12	5.50	6	3.50	6	15.38	11	6.83	1	2.04
No Answer											
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*1	.45	0	.00	0	.00	0	.00	0	.00

TABLE LV

SHOULD "SELECTED READING IN THE LIFE SCIENCES" OR "STUDENT PROJECTS" OR
 "STUDENT RESEARCH" BE OFFERED BY THE COMMUNITY
 JUNIOR COLLEGE FOR TRANSFER CREDIT?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Yes.											
President	33.33	6	2.75	6	3.50	0	.00	5	3.10	1	2.04
Chairman	33.33	9	4.12	0	.00	9	23.07	7	4.34	2	4.08
Instructor	29.19	40	18.34	40	23.39	0	.00	30	18.63	10	20.40
NSF	32.14	9	4.12	8	4.67	1	2.56	7	4.34	2	4.08
Specialist	75.00	6	2.75	0	.00	0	.00	0	.00	0	.00
		*70	32.11	54	31.57	10	25.64	49	30.43	15	30.61
B. No.											
President	61.11	11	5.04	11	6.43	0	.00	7	4.34	4	8.16
Chairman	62.96	17	7.79	0	.00	17	43.59	13	8.07	4	8.16
Instructor	64.23	88	40.36	88	51.46	0	.00	71	44.09	17	34.69
NSF	57.14	16	7.34	6	3.50	10	25.64	9	5.59	7	14.28
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*134	61.46	105	61.40	27	69.23	100	62.11	32	65.30
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	6.56	9	4.12	9	5.26	0	.00	8	4.96	1	2.04
NSF	10.71	3	1.37	2	1.17	1	2.56	2	1.24	1	2.04
		*14	6.42	12	7.01	2	5.12	12	7.45	2	4.08

TABLE LVI

A COURSE IN NATURE STUDY SHOULD BE OFFERED FOR:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Transfer credit.											
President	50.00	9	4.12	9	5.26	0	.00	7	4.34	2	4.08
Chairman	25.92	7	3.21	0	.00	7	17.94	6	3.72	1	2.04
Instructor	26.27	36	16.51	36	21.05	0	.00	26	16.14	10	20.40
NSF	28.57	8	3.66	6	3.50	2	5.12	6	3.72	2	4.08
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*64	29.35	51	29.82	9	23.07	45	27.95	15	30.61
B. Local graduation credit only.											
President	22.22	4	1.83	4	2.33	0	.00	2	1.24	2	4.08
Chairman	29.62	8	3.66	0	.00	8	20.51	7	4.34	1	2.04
Instructor	22.62	31	14.22	31	18.12	0	.00	25	15.52	6	12.24
NSF	21.42	6	2.75	3	1.75	3	7.69	4	2.48	2	4.08
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*50	22.93	38	22.22	11	28.20	38	23.60	11	22.44
C. As a community service.											
President	27.77	5	2.29	5	2.92	0	.00	4	2.48	1	2.04
Chairman	40.74	11	5.04	0	.00	11	28.20	7	4.34	4	8.16
Instructor	37.95	52	23.85	52	30.40	0	.00	43	26.70	9	18.36
NSF	39.28	11	5.04	6	3.50	5	12.82	8	4.96	3	6.12
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*81	37.15	63	36.84	16	41.02	62	38.50	17	34.69
No Answer											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	13.13	18	8.25	18	10.52	0	.00	15	9.31	3	6.12
NSF	10.71	3	1.37	1	.58	2	5.12	0	.00	3	6.12
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*23	10.55	19	11.11	3	7.69	16	9.93	6	12.24

TABLE LVII

SHOULD INTRODUCTORY COURSES SUCH AS GENERAL BIOLOGY, GENERAL ZOOLOGY OR GENERAL BOTANY
BE PRESENTED AS A LECTURE-DEMONSTRATION PRESENTATION, ON OPEN
CIRCUIT TELEVISION, FOR COLLEGE CREDIT?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Yes.											
President	16.66	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Chairman	11.11	3	1.37	0	.00	3	7.69	2	1.24	1	2.04
Instructor	9.48	13	5.96	13	7.60	0	.00	13	8.07	0	.00
NSF	10.71	3	1.37	1	.58	2	5.12	2	1.24	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*23	10.55	17	9.94	5	12.82	20	12.42	2	4.08
B. No.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	3.64	5	2.29	5	2.92	0	.00	3	1.86	2	4.08
		*7	3.21	6	3.50	1	2.56	5	3.10	2	4.08
If the answer is "no", would it be more acceptable if a laboratory session accompanied the TV course?											
A. Yes.											
President	72.22	13	5.96	13	7.60	0	.00	8	4.96	5	10.20
Chairman	70.37	19	8.71	0	.00	19	48.71	15	9.31	4	8.16
Instructor	68.61	94	43.11	94	54.97	0	.00	74	45.96	20	40.81
NSF	75.00	21	9.63	12	7.01	9	23.07	12	7.45	9	18.36
Specialist	75.00	6	2.75	0	.00	0	.00	0	.00	0	.00
		*153	70.18	119	69.59	28	71.79	109	67.70	38	77.55
B. No.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	14.81	4	1.83	0	.00	4	10.25	3	1.86	1	2.04

TABLE LVII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
Instructor	13.86	19	8.71	19	11.11	0	.00	15	9.31	4	8.16
NSF	7.14	2	.91	2	1.16	0	.00	2	1.24	0	.00
		*26	11.92	22	12.86	4	10.25	21	13.09	5	10.20
No Answer											
Instructor	4.37	6	2.75	6	3.50	0	.00	4	2.48	2	4.08
NSF	7.13	2	.91	1	.58	1	2.56	2	1.24	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*9	4.12	7	4.09	1	2.56	6	3.72	2	4.08

TABLE LVIII

THE HIGH SCHOOL SENIOR HONOR STUDENT SHOULD BE ALLOWED TO TAKE
WHICH OF THE FOLLOWING COMMUNITY JUNIOR COLLEGE
LIFE SCIENCE COURSES FOR COLLEGE CREDIT?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. General Biology											
President	61.11	11	5.04	11	6.43	0	.00	9	5.59	2	4.08
Chairman	70.37	19	8.71	0	.00	19	48.71	14	8.69	5	10.20
Instructor	72.99	100	45.87	100	58.47	0	.00	80	49.68	20	40.81
NSF	67.85	19	8.71	11	6.43	8	20.51	11	6.83	8	16.32
Specialist	75.00	6	2.75	0	.00	0	.00	0	.00	0	.00
		*155	71.10	122	71.34	27	69.23	114	70.80	35	71.42
B. General Zoology											
President	61.11	11	5.04	11	6.43	0	.00	9	5.59	2	4.08
Chairman	48.14	13	5.96	0	.00	13	33.33	10	6.21	3	6.12
Instructor	60.58	83	38.07	83	48.53	0	.00	66	40.94	17	34.69
NSF	46.42	13	5.96	8	4.67	5	12.82	9	5.59	4	8.16
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*124	56.88	102	59.64	18	46.15	94	58.38	26	53.06
C. General Botany											
President	55.55	10	4.58	10	5.84	0	.00	8	4.96	2	4.08
Chairman	48.14	13	5.96	0	.00	13	33.33	10	6.21	3	6.12
Instructor	59.12	81	37.15	81	47.36	0	.00	64	39.75	17	34.69
NSF	46.42	13	5.96	7	4.09	6	15.38	9	5.59	4	8.16
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*121	55.50	98	57.30	19	48.71	91	56.52	26	53.06
D. Human Anatomy-Physiology											
President	33.33	6	2.75	6	3.50	0	.00	5	3.10	1	2.04
Chairman	22.22	6	2.75	0	.00	6	15.38	4	2.48	2	4.08
Instructor	29.92	41	18.80	41	23.97	0	.00	32	19.87	9	18.36
NSF	32.14	9	4.21	4	2.33	5	12.82	5	3.10	4	8.16
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*65	29.81	51	29.82	11	28.20	46	28.57	16	32.65

TABLE LVIII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
E. Comparative Anatomy											
President	22.22	4	1.83	4	2.33	0	.00	3	1.86	1	2.04
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	21.16	29	13.30	29	16.95	0	.00	19	11.80	10	20.40
NSF	25.00	7	3.21	3	1.75	4	10.25	2	1.24	5	10.20
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*43	19.72	36	21.05	6	15.38	26	16.14	16	32.65
F. Invertebrate Zoology											
President	16.66	3	1.37	3	1.75	0	.00	2	1.24	1	2.04
Chairman	14.81	4	1.83	0	.00	4	10.25	4	2.48	0	.00
Instructor	20.43	28	12.84	28	16.37	0	.00	19	11.80	9	18.36
NSF	21.42	6	2.75	3	1.75	3	7.69	2	1.24	4	8.16
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*42	19.26	34	19.88	7	17.94	27	16.77	14	28.57
G. Others											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	5.10	7	3.21	7	4.09	0	.00	7	4.34	0	.00
NSF	7.14	2	.91	0	.00	2	5.12	0	.00	2	4.08
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*13	5.96	8	4.67	4	10.25	9	5.59	3	6.12
H. No courses for college cr.											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	11.11	3	1.37	0	.00	3	7.69	3	1.86	0	.00
Instructor	4.37	6	2.75	6	3.50	0	.00	3	1.86	3	6.12
NSF	7.14	2	.91	1	.58	1	2.56	1	.62	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*12	5.50	7	4.09	4	10.25	7	4.34	4	8.16
No Answer											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Chairman	7.40	2	.91	0	.00	2	5.12	1	.62	1	2.04
Instructor	6.56	9	4.21	9	5.26	0	.00	6	3.72	3	6.12
NSF	7.14	2	.91	1	.58	1	2.56	1	.62	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*15	6.88	11	6.43	3	7.69	8	4.96	5	10.20

TABLE LIX
PREREQUISITES

	Gen. Biol. 1 Sem.		Gen. Biol. 1 Year		Gen. Zool. 1 Sem.		Gen. Zool. 1 Year		Gen. Botany 1 Sem.		Gen. Botany 1 Year		Inorganic Chemistry		Organic Chemistry		Bio-Chemistry		Finite Math		Calculus		General Physics		High School Chemistry		High School Biology	
	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%	R	%
Gen. Biol. 1 Sem.	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	5	2.29	2	.91	0	.00	4	1.83	0	.00	0	.00	27	12.38	33	15.13
Gen. Biol. 1 Year	5	2.29	0	.00	0	.00	0	.00	0	.00	0	.00	13	5.97	3	1.37	0	.00	4	1.83	0	.00	0	.00	39	17.88	38	17.43
Gen. Zool. 1 Sem.	35	16.05	24	11.00	0	.00	0	.00	0	.00	0	.00	10	4.58	5	2.29	0	.00	5	2.29	1	.45	3	1.37	29	13.30	42	19.26
Gen. Zool. 1 Year	28	12.84	25	11.46	4	1.83	0	.00	0	.00	0	.00	13	5.96	3	1.37	0	.00	3	1.37	1	.45	1	.45	31	14.22	45	20.64
Gen. Botany 1 Sem.	33	15.13	23	10.55	0	.00	0	.00	0	.00	0	.00	10	4.58	5	2.29	0	.00	5	2.29	1	.45	3	1.37	28	12.84	36	16.51
Gen. Botany 1 Year	27	12.38	24	11.00	0	.00	1	.45	0	.00	0	.00	12	5.50	3	1.37	0	.00	3	1.37	1	.45	1	.45	29	13.30	40	18.34
Anat.-Physiol. 1 Sem.	52	23.85	58	26.60	41	18.80	37	16.97	2	.91	2	.91	39	17.88	20	9.17	5	2.29	3	1.37	1	.45	4	1.83	25	11.46	45	20.64
Anat.-Physiol. 1 Year	45	20.64	68	31.19	40	18.34	40	18.34	2	.91	2	.91	44	20.18	27	12.38	9	4.12	3	1.37	2	.91	4	1.83	24	11.00	18	8.25
Human Anatomy	40	18.34	64	29.35	48	22.01	43	19.72	2	.91	2	.91	10	4.58	6	2.75	0	.00	1	.45	1	.45	1	.45	17	7.79	18	8.25
Human Physiol.	42	19.26	70	32.11	45	20.64	45	20.64	2	.91	2	.91	57	26.14	44	20.18	16	7.33	2	.91	3	1.37	9	4.12	18	8.25	15	6.88
Comp. Anatomy	42	19.26	75	34.40	87	39.90	65	29.81	2	.91	2	.91	11	5.04	10	4.58	3	1.37	1	.45	0	.00	2	.91	13	5.96	11	5.04
Invertebrate Zoology	42	19.26	67	30.73	81	37.15	55	25.22	1	.45	1	.45	11	5.04	10	4.58	1	.45	1	.45	2	.91	4	1.83	16	7.33	14	6.42
Vertebrate Zoology	38	17.43	68	31.19	81	37.15	46	21.10	1	.45	1	.45	14	6.42	10	4.58	1	.45	2	.91	1	.45	4	1.83	12	5.50	11	5.04
Comp. Animal Physiology	32	14.67	74	33.94	61	27.98	62	28.44	2	.91	1	.45	73	33.48	76	34.86	31	14.22	5	2.29	5	2.29	10	4.58	15	6.88	11	5.04
Vertebrate Embryology	31	14.22	72	33.02	74	33.94	70	32.11	1	.45	1	.45	25	11.46	26	11.92	9	4.12	1	.45	0	.00	2	.91	11	5.04	10	4.58
Genetics	48	22.01	88	40.36	51	23.39	43	19.72	22	10.09	14	6.42	29	13.30	26	11.92	13	5.96	23	10.55	12	5.50	2	.91	10	4.58	11	5.04
Ornithology	40	18.34	61	27.98	64	29.35	54	24.77	3	1.37	2	.91	2	.91	0	.00	0	.00	1	.45	0	.00	0	.00	8	3.66	7	3.21
Entomology	39	17.88	66	30.27	73	33.48	55	25.22	6	2.75	2	.91	7	3.21	2	.91	0	.00	1	.45	0	.00	0	.00	9	4.12	9	4.12
Histology	41	18.80	74	33.94	59	27.06	51	23.39	10	4.58	9	4.12	36	16.51	26	11.92	8	3.66	2	.91	2	.91	2	.91	11	5.04	8	3.66
Ecology	39	17.88	78	35.77	60	27.52	50	22.93	38	17.43	30	13.76	20	9.17	16	7.33	4	1.83	5	2.29	4	1.83	6	2.75	11	5.04	9	4.12
Evolution	39	17.88	75	34.40	47	21.55	44	20.18	24	11.00	27	12.38	13	5.96	12	5.50	9	4.12	6	2.75	3	1.37	3	1.37	10	4.58	11	5.04
Nature Study	18	8.25	23	10.55	16	7.33	8	3.66	14	6.42	6	2.75	0	.00	0	.00	0	.00	0	.00	0	.00	0	.00	7	3.21	12	5.50

TABLE LX

THE PREREQUISITES FOR LIFE SCIENCE COURSES SHOULD BE VIEWED AS:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. barriers keeping a student out of a course until all requirements are met.											
Instructor	5.38	8	3.66	8	4.67	0	.00	4	2.48	4	8.16
NSF	3.57	1	.45	1	.58	0	.00	0	.00	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*10	4.58	9	5.26	0	.00	4	2.48	5	10.20
B. suggestions of preparation necessary to gain optimally from the course.											
President	66.66	12	5.50	12	7.01	0	.00	8	4.96	4	8.16
Chairman	51.85	14	6.42	0	.00	14	35.89	11	6.83	3	6.12
Instructor	59.85	82	37.61	82	47.95	0	.00	66	40.99	16	32.65
NSF	53.57	15	6.88	8	4.67	7	17.94	7	4.34	8	16.32
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*126	57.79	102	59.64	21	53.84	92	57.14	31	63.26
C. could be viewed as both suggestions and barriers.											
President	33.33	6	2.75	6	3.50	0	.00	5	3.10	1	2.04
Chairman	48.14	13	5.96	0	.00	13	33.33	10	6.21	3	6.12
Instructor	34.30	47	21.55	47	27.48	0	.00	39	24.22	8	16.32
NSF	42.85	12	5.50	7	4.09	5	12.82	11	6.83	1	2.04
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*81	37.15	60	35.08	18	46.15	65	40.37	13	26.53
No Answer											
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*1	.45	0	.00	0	.00	0	.00	0	.00

TABLE LXI

A COMMUNITY JUNIOR COLLEGE IS JUSTIFIED IN LIMITING ITS LIFE SCIENCE ENROLLMENT
BY REQUIRING THE PROSPECTIVE STUDENT TO:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. get permission of the instructor.											
President	11.11	2	.91	2	1.16	0	.00	1	.62	1	2.04
Chairman	11.11	3	1.37	0	.00	3	7.69	1	.62	2	4.08
Instructor	11.67	16	7.33	16	9.35	0	.00	15	9.31	1	2.04
NSF	10.71	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Specialist	12.50	2	.91	0	.00	0	.00	0	.00	0	.00
		*26	11.92	21	12.28	3	7.69	20	12.42	4	8.16
B. meet prerequisites.											
President	50.00	9	4.12	9	5.26	0	.00	6	3.72	3	6.12
Chairman	62.96	17	7.79	0	.00	17	43.58	13	8.07	4	8.16
Instructor	54.01	74	33.94	74	43.27	0	.00	62	38.50	12	24.48
NSF	50.00	14	6.42	7	4.09	7	17.94	10	6.21	4	8.16
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*119	54.58	90	52.63	24	61.53	91	56.52	23	46.93
C. have a minimum natural science and/or composite score on a standardized national achievement examination.											
President	16.66	3	1.37	3	1.75	0	.00	2	1.24	1	2.04
Chairman	22.22	6	2.75	0	.00	6	15.38	2	1.24	4	8.16
Instructor	13.13	18	8.25	18	10.52	0	.00	16	9.93	2	4.08
NSF	10.71	3	1.37	2	1.16	1	2.56	2	1.24	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*31	14.22	23	13.45	7	17.94	22	13.66	8	16.32

TABLE LXI (Continued)

Alternatives	Totals		Two-Year		Four-Year		Public		Private		
	%	R	%	R	%	R	%	R	%	R	
D. possess a minimum cumulative high school grade point average.											
President	16.66	3	1.37	3	1.75	0	.00	2	1.24	1	2.04
Chairman	14.81	4	1.83	0	.00	4	10.25	2	1.24	2	4.08
Instructor	5.83	8	3.66	8	4.67	0	.00	8	4.96	0	.00
NSF	7.14	2	.91	0	.00	2	5.12	0	.00	2	4.08
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*18	8.25	11	6.43	6	15.38	12	7.45	5	10.20
E. a combination of the above factors.											
President	44.44	8	3.66	8	4.67	0	.00	6	3.72	2	4.08
Chairman	22.22	6	2.75	0	.00	6	15.38	6	3.72	0	.00
Instructor	36.49	50	22.93	50	29.23	0	.00	37	22.98	13	26.53
NSF	39.28	11	5.04	7	4.09	4	10.25	7	4.34	4	8.16
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*76	34.86	65	38.01	10	25.64	56	34.78	19	38.77
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	2.18	3	1.37	3	1.75	0	.00	1	.62	2	4.08
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
Specialist	.00	0	.00	0	.00	0	.00	0	.00	0	.00
		*6	2.75	5	2.92	1	2.56	4	2.48	2	4.08

TABLE LXII

SHOULD THE COURSE PREREQUISITES, REQUIREMENTS OR RESTRICTIONS NORMALLY ACCEPTED
BY THE LIFE SCIENCE STAFF IN STUDENT ADVISEMENT BE
INCLUDED IN THE COURSE DESCRIPTIONS?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Yes.											
President	94.44	17	7.79	17	9.94	0	.00	12	7.45	5	10.20
Chairman	96.29	26	11.92	0	.00	26	66.66	20	12.42	6	12.24
Instructor	94.16	129	59.17	129	75.43	0	.00	106	65.83	23	46.93
NSF	92.85	26	11.92	15	8.77	11	28.20	17	10.55	9	18.36
Specialist	87.50	7	3.21	0	.00	0	.00	0	.00	0	.00
		*205	94.03	161	94.15	37	94.87	155	96.27	43	87.75
B. No.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	7.30	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	1.45	2	.91	2	1.16	0	.00	0	.00	2	4.08
NSF	3.57	1	.45	0	.00	1	2.56	0	.00	1	2.04
		*5	2.29	3	1.75	2	5.12	2	1.24	3	6.12
No Answer											
Instructor	4.37	6	2.75	6	3.50	0	.00	3	1.86	3	6.12
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*8	3.66	7	4.09	0	.00	4	2.48	3	6.12

TABLE LXIII

THE PREREQUISITE(S) FOR A FULL YEAR GENERAL ZOOLOGY COURSE SHOULD BE:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. high school Biology.											
President	33.33	6	2.75	6	3.50	0	.00	5	3.10	1	2.04
Chairman	25.92	7	3.21	0	.00	7	17.94	7	4.34	0	.00
Instructor	33.57	46	21.10	46	26.90	0	.00	40	24.84	6	12.24
NSF	39.28	11	5.04	6	3.50	5	12.82	6	3.72	5	10.20
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*72	33.02	58	33.91	12	30.76	58	36.02	12	24.48
B. high school Chemistry.											
President	16.66	3	1.37	3	1.75	0	.00	2	1.24	1	2.04
Chairman	22.22	6	2.75	0	.00	6	15.38	5	3.10	1	2.04
Instructor	29.19	40	18.34	40	23.39	0	.00	37	22.98	3	6.12
NSF	28.57	8	3.66	5	2.92	3	7.69	4	2.48	4	8.16
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*59	27.06	48	28.07	9	23.07	48	29.81	9	18.36
C. college level General Biology.											
President	27.77	5	2.29	5	2.92	0	.00	3	1.86	2	4.08
Chairman	14.81	4	1.83	0	.00	4	10.25	2	1.24	2	4.08
Instructor	24.08	33	15.13	33	19.29	0	.00	26	16.14	7	14.28
NSF	14.28	4	1.83	2	1.16	2	5.12	3	1.86	1	2.04
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*49	22.47	40	23.39	6	15.38	34	21.11	12	24.48
D. a minimum natural science and composite score on a national achievement test.											
President	16.66	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Chairman	29.62	8	3.66	0	.00	8	20.51	5	3.10	3	6.12
Instructor	25.54	35	16.05	35	20.46	0	.00	27	16.77	8	16.32

TABLE LXIII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
NSF	14.28	4	1.83	2	1.16	2	5.12	2	1.24	2	4.08
Specialist	.00	0	.00	0	.00	0	.00	0	.00	0	.00
		*50	22.93	40	23.39	10	25.64	37	22.98	13	26.53
E. no prerequisites needed.											
President	33.33	6	2.75	6	3.50	0	.00	4	2.48	2	4.08
Chairman	48.14	13	5.96	13	7.60	0	.00	13	8.07	0	.00
Instructor	25.54	35	16.05	35	20.46	0	.00	28	17.39	7	14.28
NSF	39.28	11	5.04	5	2.92	6	15.38	7	4.34	4	8.16
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*66	30.27	59	34.50	6	15.38	52	32.29	13	26.53
No Answer											
President	.00	0	.00	0	.00	0	.00	0	.00	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	0	.00	1	2.04
Instructor	5.83	8	3.66	8	4.67	0	.00	5	3.10	3	6.12
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*12	5.50	9	5.26	1	2.56	6	3.72	4	8.16

TABLE LXIV

IF A "CORE CURRICULUM" IN THE LIFE SCIENCES IS DEVELOPED BY ONE OR MORE SENIOR COLLEGES, TO WHICH A MAJORITY OF YOUR MAJORS TRANSFER, THE "CORE" WOULD:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. force an alteration of your curriculum.											
President	50.00	9	4.12	9	5.26	0	.00	6	3.72	3	6.12
Chairman	29.62	8	3.67	0	.00	8	20.51	6	3.72	2	4.08
Instructor	45.25	62	28.44	62	36.25	0	.00	47	29.19	15	30.61
NSF	39.28	11	5.04	7	4.09	4	10.25	9	5.59	2	4.08
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*93	42.66	78	45.61	12	30.77	68	42.23	22	44.89
B. weaken your life science department.											
Instructor	1.45	2	.91	2	1.17	0	.00	2	1.24	0	.00
		*2	.91	2	1.17	0	.00	2	1.24	0	.00
C. cause the better students to not attend your institution.											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	7.30	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	1.45	2	.91	2	1.17	0	.00	2	1.24	0	.00
		*4	1.83	3	1.75	1	2.56	4	2.48	0	.00
D. probably not cause a change.											
President	27.77	5	2.29	5	2.92	0	.00	3	1.86	2	4.08
Chairman	48.14	13	5.96	0	.00	13	33.33	10	6.21	3	6.12
Instructor	44.52	61	27.98	61	35.67	0	.00	51	31.67	10	20.40

TABLE LXIV (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
NSF	28.57	8	3.67	6	3.50	2	5.12	5	3.10	3	6.12
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*88	40.36	72	42.10	15	38.46	69	42.85	18	36.73
No Answer											
President	16.66	3	1.37	3	1.75	0	.00	3	1.86	0	.00
Chairman	18.51	5	2.29	0	.00	5	12.82	4	2.48	1	2.04
Instructor	7.29	10	4.58	10	5.84	0	.00	7	4.34	3	6.12
NSF	32.14	9	4.12	3	1.75	6	15.38	4	2.48	5	10.20
Specialist	14.28	4	1.83	0	.00	0	.00	0	.00	0	.00
		*31	14.22	16	9.35	11	28.20	18	11.18	9	18.36

TABLE LXV

ARE YOU FAMILIAR WITH THE "CORE CURRICULA" AS OUTLINED BY CUEBS OF THE
AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Yes.											
President	66.66	12	5.50	12	7.01	0	.00	9	5.59	3	6.12
Chairman	92.59	25	11.46	0	.00	25	64.10	19	11.80	6	12.24
Instructor	68.61	94	43.11	94	54.97	0	.00	73	45.34	21	42.85
NSF	64.28	18	8.25	10	5.84	8	20.51	11	6.83	7	14.28
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*154	70.64	116	67.83	33	84.61	112	69.56	37	75.51
B. No.											
President	27.77	5	2.29	5	2.92	0	.00	3	1.86	2	4.08
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	29.92	41	18.80	41	23.97	0	.00	34	21.11	7	14.28
NSF	28.57	8	3.66	5	2.92	3	7.69	6	3.72	2	4.08
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*58	26.60	51	29.82	5	12.82	45	27.93	11	22.44
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Instructor	1.45	2	.91	2	1.16	0	.00	2	1.24	0	.00
NSF	7.14	2	.91	1	.58	1	2.56	1	.62	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*6	2.75	4	2.33	1	2.56	4	2.48	1	2.04

TABLE LXVI

HAVE YOU CONSIDERED INITIATING A 'CORE CURRICULUM' IN YOUR LIFE SCIENCE PROGRAM?

Alternatives	Totals		Two-Year		Four-Year		Public		Private		
	%	R	%	R	%	R	%	R	%	R	
A. Yes.											
President	50.00	9	4.12	9	5.26	0	.00	8	4.96	1	2.04
Chairman	85.18	23	10.55	0	.00	23	58.97	18	11.18	5	10.20
Instructor	48.17	66	30.27	66	38.59	0	.00	53	32.91	13	26.53
NSF	57.14	16	7.34	7	4.09	9	23.07	8	4.96	8	16.32
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*118	54.12	82	47.95	32	82.05	87	54.03	27	55.10
B. No.											
President	44.44	8	3.67	8	4.67	0	.00	4	2.48	4	8.16
Chairman	14.81	4	1.83	0	.00	4	10.25	3	1.86	1	2.04
Instructor	50.36	69	31.65	69	40.35	0	.00	54	33.54	15	30.61
NSF	35.71	10	4.58	8	4.67	2	5.12	8	4.96	2	4.08
		*91	41.74	85	49.70	6	15.38	69	42.85	22	44.89
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Instructor	1.45	2	.91	2	1.17	0	.00	2	1.24	0	.00
NSF	7.14	2	.91	1	.58	1	2.56	2	1.24	0	.00
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*9	4.12	4	2.34	1	2.56	5	3.10	0	.00

TABLE LXVII

HAVE YOU CONSIDERED OR HAVE YOU BEEN APPROACHED, BY ONE OR MORE SENIOR COLLEGES, ABOUT INITIATING A "CORE CURRICULUM"?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Yes.											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
		*1	.45	0	.00	1	2.56	1	.62	0	.00
B. No.											
President	88.88	16	7.33	16	9.35	0	.00	11	6.83	5	10.20
Chairman	44.44	12	5.50	0	.00	12	30.76	8	4.96	4	8.16
Instructor	77.37	106	48.62	106	61.98	0	.00	81	50.31	25	51.02
NSF	64.28	18	8.25	13	7.60	5	12.82	14	8.69	4	8.16
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*154	70.64	135	78.94	17	43.58	114	70.80	38	77.55
If yes, was it:											
A. your own department?											
Chairman	18.51	5	2.29	0	.00	5	12.82	4	2.48	1	2.04
Instructor	10.94	15	6.88	15	8.77	0	.00	12	7.45	3	6.12
NSF	17.85	5	2.29	1	.58	4	10.25	2	1.24	3	6.12
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*26	11.92	16	9.35	9	23.07	18	11.18	7	14.28
B. a four-year institution?											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	5.38	8	3.66	8	4.67	0	.00	8	4.96	0	.00
NSF	3.57	1	.45	1	.58	0	.00	1	.62	0	.00
		*11	5.04	10	5.84	1	2.56	11	6.83	0	.00

TABLE LXVII (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
C. some other agency?											
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	1.45	2	.91	2	1.16	0	.00	2	1.24	0	.00
		*4	1.83	2	1.16	2	5.12	4	2.48	0	.00
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	22.22	6	2.75	0	.00	6	15.38	5	3.10	1	2.04
Instructor	4.37	6	2.75	6	3.50	0	.00	6	3.72	0	.00
NSF	14.28	4	1.83	1	.58	3	7.69	1	.62	3	6.12
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*22	10.09	8	4.67	9	23.07	13	8.07	4	8.16

TABLE LXVIII

IF A LIFE SCIENCE COURSE IS TO BE INCLUDED IN THE TERMINAL CURRICULA
THE COURSE SHOULD BE OFFERED FOR THIS GROUP ONLY:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Yes.											
President	66.66	12	5.50	12	7.01	0	.00	8	4.96	4	8.16
Chairman	77.77	21	9.63	0	.00	21	53.84	17	10.55	4	8.16
Instructor	72.26	99	45.41	99	57.89	0	.00	73	45.34	26	53.06
NSF	85.71	24	11.01	15	8.77	9	23.07	15	9.31	9	18.36
Specialist	87.50	7	3.21	0	.00	0	.00	0	.00	0	.00
		*163	74.77	126	73.68	30	76.92	113	70.18	43	87.75
B. No.											
President	27.77	5	2.29	5	2.92	0	.00	4	2.48	1	2.04
Chairman	14.81	4	1.83	0	.00	4	10.25	3	1.86	1	2.04
Instructor	18.24	25	11.46	25	14.61	0	.00	25	15.52	0	.00
NSF	10.71	3	1.37	1	.58	2	5.12	2	1.24	1	2.04
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*38	17.43	31	18.12	6	15.38	34	21.11	3	6.12
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	1	.62	1	2.04
Instructor	9.48	13	5.96	13	7.60	0	.00	11	6.83	2	4.08
NSF	3.57	1	.45	0	.00	1	2.56	1	.62	0	.00
		*17	7.79	14	8.18	3	7.69	14	8.69	3	6.12

TABLE LXIX

IF A LIFE SCIENCE COURSE IS TO BE INCLUDED IN THE TERMINAL CURRICULA THE STUDENT SHOULD:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. take the course(s) he desires as long as he has the prerequisites.											
President	33.33	6	2.75	6	3.50	0	.00	4	2.48	2	4.08
Chairman	22.22	6	2.75	0	.00	6	15.38	6	3.72	0	.00
Instructor	24.08	33	15.13	33	19.29	0	.00	29	18.01	4	8.16
NSF	39.28	11	5.04	5	2.92	6	15.38	7	4.34	4	8.16
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*58	26.60	44	25.73	12	30.76	46	28.57	10	20.40
B. take a life science course structured for the terminal student.											
President	61.11	11	5.04	11	6.43	0	.00	8	4.96	3	6.12
Chairman	70.37	19	8.71	0	.00	19	48.71	13	8.07	6	12.24
Instructor	69.34	95	43.57	95	55.55	0	.00	71	44.09	24	48.97
NSF	53.57	15	6.88	10	5.84	5	12.82	9	5.59	6	12.24
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*144	66.05	116	67.83	24	61.53	101	62.73	39	79.59
No Answer											
President	5.55	1	.45	1	.58	0	.00	1	.62	0	.00
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	6.56	9	4.12	9	5.26	0	.00	9	5.59	0	.00
NSF	7.14	2	.91	1	.58	1	2.56	2	1.24	0	.00
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*16	7.34	11	6.43	3	7.69	14	8.69	0	.00

TABLE LXX

WHAT BIOLOGY COURSE(S) SHOULD BE OFFERED IN THE ADULT
OR EVENING SCHOOL PROGRAM?

Alternatives	Totals		Two-Year		Four-Year		Public		Private		
	%	R	%	R	%	R	%	R	%	R	
A. Any of the biology courses in the regular curriculum.											
President	11.11	2	.91	2	1.16	0	.00	1	.62	1	2.04
Chairman	7.40	2	.91	0	.00	2	5.12	2	1.24	0	.00
Instructor	12.40	17	7.79	17	9.94	0	.00	15	9.31	2	4.08
NSF	14.28	4	1.83	1	.58	3	7.69	3	1.86	1	2.04
		*25	11.46	20	11.69	5	12.82	21	13.04	4	8.16
B. Any of the biology courses in the regular curriculum if there is sufficient demand.											
President	88.88	16	7.33	16	9.35	0	.00	12	7.45	4	8.16
Chairman	85.18	23	10.55	0	.00	23	58.97	17	10.55	6	12.24
Instructor	83.94	115	52.75	115	67.25	0	.00	92	57.14	23	46.93
NSF	78.57	22	10.09	15	8.77	7	17.94	14	8.69	8	16.32
Specialist	75.00	6	2.75	0	.00	0	.00	0	.00	0	.00
		*182	83.48	146	85.38	30	76.92	135	83.85	41	83.67
C. A one semester non-laboratory biology course for this group only.											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	2.91	4	1.83	4	2.33	0	.00	1	.62	3	6.12
		*5	2.29	4	2.33	1	2.56	2	1.24	3	6.12

TABLE LXX (Continued)

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
D. Biology courses need not be offered for this group.											
Instructor	.72	1	.45	1	.58	0	.00	1	.62	0	.00
		*1	.45	1	.58	0	.00	1	.62	0	.00
No Answer											
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
NSF	7.14	2	.91	0	.00	2	5.12	1	.62	1	2.04
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*5	2.29	0	.00	3	7.69	2	1.24	1	2.04

TABLE LXXI

SHOULD SOME ADVANCED LIFE SCIENCE COURSES (ECOLOGY, ETC.) BE OFFERED
ONLY DURING THE SUMMER TERM?

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. Yes.											
President	33.33	6	2.75	6	3.50	0	.00	5	3.10	1	2.04
Chairman	18.51	5	2.29	0	.00	5	12.82	4	2.48	1	2.04
Instructor	24.08	33	15.13	33	19.29	0	.00	28	17.39	5	10.20
NSF	28.57	8	3.66	6	3.50	2	5.12	5	3.10	3	6.12
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*53	24.31	45	26.31	7	17.94	42	26.08	10	20.40
B. No.											
President	61.11	11	5.04	11	6.43	0	.00	8	4.96	3	6.12
Chairman	77.77	21	9.63	0	.00	21	53.84	16	9.93	5	10.20
Instructor	72.26	99	45.41	99	57.89	0	.00	78	48.44	21	42.85
NSF	64.28	18	8.25	10	5.84	8	20.51	12	7.45	6	12.24
Specialist	37.50	3	1.37	0	.00	0	.00	0	.00	0	.00
		*152	69.72	120	70.17	29	74.35	114	70.80	35	71.42
No Answer											
President	5.55	1	.45	1	.58	0	.00	0	.00	1	2.04
Chairman	3.70	1	.45	0	.00	1	2.56	1	.62	0	.00
Instructor	3.64	5	2.29	5	2.92	0	.00	3	1.86	2	4.08
NSF	7.14	2	.91	0	.00	2	5.12	1	.62	1	2.04
Specialist	50.00	4	1.83	0	.00	0	.00	0	.00	0	.00
		*13	5.96	6	3.50	3	7.69	5	3.10	4	8.16

TABLE LXXII

HUMAN ANATOMY AND PHYSIOLOGY SHOULD BE TAUGHT AS:

Alternatives	Totals			Two-Year		Four-Year		Public		Private	
	%	R	%	R	%	R	%	R	%	R	%
A. a unified course where the anatomy and its corresponding physiology are covered simultaneously.											
President	72.22	13	5.96	13	7.60	0	.00	8	4.96	5	10.20
Chairman	74.07	20	9.17	0	.00	20	51.28	15	9.31	5	10.20
Instructor	75.91	104	47.70	104	60.81	0	.00	87	54.03	17	34.69
NSF	75.00	21	9.63	10	5.84	11	28.20	11	6.83	10	20.40
Specialist	62.50	5	2.29	0	.00	0	.00	0	.00	0	.00
		*163	74.77	127	74.26	31	79.48	121	75.15	37	75.51
B. two separate courses, Human Anatomy first followed by Human Physiology.											
President	27.77	5	2.29	5	2.92	0	.00	5	3.10	0	.00
Chairman	14.81	4	1.83	0	.00	4	10.25	4	2.48	0	.00
Instructor	15.32	21	9.63	21	12.28	0	.00	15	9.31	6	12.24
NSF	21.42	6	2.75	6	3.50	0	.00	6	3.72	0	.00
Specialist	12.50	1	.45	0	.00	0	.00	0	.00	0	.00
		*37	16.97	32	18.71	4	10.25	30	18.63	6	12.24
C. two separate courses, Human Physiology first followed by Human Anatomy.											
Instructor	5.10	7	3.21	7	4.09	0	.00	6	3.72	1	2.04
		*7	3.21	7	4.09	0	.00	6	3.72	1	2.04
No Answer											
Chairman	11.11	3	1.37	0	.00	3	7.69	2	1.24	1	2.04
Instructor	3.64	5	2.29	5	2.92	0	.00	1	.62	4	8.16
NSF	3.57	1	.45	0	.00	1	2.56	1	.62	0	.00
Specialist	25.00	2	.91	0	.00	0	.00	0	.00	0	.00
		*11	5.04	5	2.92	4	10.25	4	2.48	5	10.20

APPENDIX B

TWO-YEAR SCHOOLS TO WHICH THE OPINIONNAIRE WAS SENT

Phoenix College
Phoenix, Arizona

Southern Baptist College
Walnut Ridge, Arkansas

Northeastern Junior College
Sterling, Colorado

Mesa College
Grand Junction, Colorado

Rangely College
Rangely, Colorado

Trinidad State Junior College
Trinidad, Colorado

BloomTownship Community College
Chicago Heights, Illinois

Belleville Junior College
Belleville, Illinois

Morton Junior College
Cicero, Illinois

Springfield Junior College
Springfield, Illinois

Kendall College
Evanston, Illinois

Monticello College
Godfrey, Illinois

Kaskaskia College
Centralia, Illinois

Black Hawk College
Moline, Illinois

Thornton Junior College
Harvey, Illinois

Lincoln College
Lincoln, Illinois

LaSalle-Peru-Oglesby Junior College
LaSalle, Illinois

Lyons Township Junior College
LaGrange, Illinois

Joliet Junior College
Joliet, Illinois

Chicago City Junior Colleges
Chicago, Illinois
Amundsen Branch
Bogan Branch
Crane Branch
Fenger Branch
Loop Branch
Southeast Branch
Wilson Branch
Wright Branch

St. Bede Junior College
Peru, Illinois

Vincennes University
Vincennes, Indiana

Mt. Saint Clare College for Women
Clinton, Iowa

Mason City Junior College
Mason City, Iowa

Waldorf College
Forest City, Iowa

APPENDIX B (Continued)

Grand View College Des Moines, Iowa	Lake Michigan College Benton Harbor, Michigan
Ottumwa Heights College Ottumwa, Iowa	Grand Rapids Junior College Grand Rapids, Michigan
Burlington Community College Burlington, Iowa	Muskegon County Community College Muskegon, Michigan
Ellsworth College Iowa Falls, Iowa	Kellogg Community College Battle Creek, Michigan
Kansas City Community Jr. College Kansas City, Kansas	Lansing Community College Lansing, Michigan
Hesston College Hesston, Kansas	Flint Community Junior College Flint, Michigan
Donnelly College Kansas City, Kansas	Rochester Junior College Rochester, Minnesota
Hutchinson Junior College Hutchinson, Kansas	Eveleth Junior College Eveleth, Minnesota
Independence Community College Independence, Kansas	Hibbing Junior College Hibbing, Minnesota
St. John's College Winfield, Kansas	Virginia Junior College Virginia, Minnesota
Gogebic Community College Ironwood, Michigan	Missouri-Western Junior College St. Joseph, Missouri
Henry Ford Community College Dearborn, Michigan	Kemper Military School Boonville, Missouri
Alpena Community College Alpena, Michigan	Hannibal-LaGrange College Hannibal, Missouri
Highland Park College Highland Park, Michigan	Cottey College Nevada, Missouri
Northwestern Michigan College Traverse City, Michigan	Metropolitan Junior College Kansas City, Missouri
Port Huron Junior College Port Huron, Michigan	Mercy Junior College St. Louis, Missouri
Jackson Community College Jackson, Michigan	Wentworth Military Academy Lexington, Missouri

APPENDIX B (Continued)

Missouri Southern College
Joplin, Missouri

Christian College
Columbia, Missouri

St. Mary's Junior College
O'Fallon, Missouri

New Mexico Military Institute
Roswell, New Mexico

Murray State Agricultural College
Tishomingo, Oklahoma

Bacone College
Muskogee, Oklahoma

Cameron State Agricultural College
Lawton, Oklahoma

Northeastern Oklahoma A & M College
Miami, Oklahoma

Oklahoma Military Academy
Claremore, Oklahoma

Eastern Oklahoma A & M College
Wilburton, Oklahoma

Northern Oklahoma Junior College
Tonkawa, Oklahoma

Connors State Agricultural College
Warner, Oklahoma

Potomac State College
Keyser, West Virginia

Concordia College
Milwaukee, Wisconsin

Milwaukee Institute of Technology
Milwaukee, Wisconsin

Casper College
Casper, Wyoming

Northwest Community College
Powell, Wyoming

APPENDIX C

FOUR-YEAR SCHOOLS TO WHICH THE OPINIONNAIRE WAS SENT

Arizona State College Flagstaff, Arizona	Indiana Institute of Technology Fort Wayne, Indiana
Arizona State University Tempe, Arizona	Iowa State University Ames, Iowa
University of Arizona Tucson, Arizona	State College of Iowa Cedar Falls, Iowa
University of Arkansas Fayetteville, Arkansas	Wartsburg College Waverly, Iowa
Southern State College Magnolia, Arkansas	Fort Hays Kansas State College Hays, Kansas
Agricultural, Mechanical and Normal College Pine Bluff, Arkansas	Kansas State University Manhattan, Kansas
Colorado State College Greeley, Colorado	St. Benedict's College Atchison, Kansas
Colorado State University Fort Collins, Colorado	Central Michigan University Mt. Pleasant, Michigan
Southern Colorado State College Pueblo, Colorado	The Detroit Institute of Tech. Detroit, Michigan
Bradley University Peoria, Illinois	Michigan State University East Lansing, Michigan
Eastern Illinois University Charleston, Illinois	Mankato State College Mankato, Minnesota
Southern Illinois University Carbondale Illinois	University of Minnesota Minneapolis, Minnesota
Ball State Teachers College Muncie, Indiana	St. Olaf College Northfield, Minnesota
Concordia Senior College Fort Wayne, Indiana	Central Missouri State College Warrensburg, Missouri

APPENDIX C (Continued)

Lincoln University Jefferson City, Missouri	Southwestern State College Weatherford Oklahoma
Stephens College Columbia, Missouri	Black Hills Teachers College Spearfish, South Dakota
Chadron State College Chadron, Nebraska	South Dakota School of Mines & Tech. Rapid City, South Dakota
Creighton University Omaha, Nebraska	South Dakota State College of Ag and Mechanical Arts Brookings, South Dakota
Municipal University of Omaha Omaha, Nebraska	Bluefield State College Bluefield, West Virginia
Eastern New Mexico University Portales, New Mexico	West Virginia Institute of Tech. Montgomery, West Virginia
New Mexico Highlands University Las Vegas, New Mexico	West Virginia State College Institute, West Virginia
New Mexico State University University Park, New Mexico	Stout State College Menomonie, Wisconsin
Mayville State College Mayville, North Dakota	University of Wisconsin Milwaukee, Wisconsin
North Dakota State University of Ag and Applied Science Fargo, North Dakota	Wisconsin State College LaCrosse, Wisconsin
University of North Dakota Grand Forks, North Dakota	University of Wyoming Laramie, Wyoming
Central State College Wilberforce, Ohio	
Fenn College Cleveland, Ohio	
Bowling Green State University Bowling Green, Ohio	
East Central State College Ada, Oklahoma	
Oklahoma City University Oklahoma City, Oklahoma	

APPENDIX D

SPECIALISTS TO WHOM THE OPINIONNAIRE WAS SENT

Mr. Ian Baldwin
Holt, Rinehart & Winston, Inc.
383 Madison Avenue
New York, New York 10017

Dr. C. C. Colvert
Professor & Consultant in
Junior College Education
The University of Texas
Austin, Texas 78712

Dr. William H. Crawford
Professor of Education
Washington State University
Pullman, Washington

Dr. James D. Ebert
Professor of Zoology
Carnegie Institute of Washington
Washington, D. C.

Dr. H. Bentley Glass
Professor of Zoology
John Hopkins University
Baltimore, Maryland 21205

Dr. Arnold B. Grobman
Dean of Arts & Sciences
Rutgers University
New Brunswick, New Jersey 08903

Dr. Clifford Grobstein
Chairman of the Dept. of Zoology
University of California
San Diego, California 92106

Dr. B. Lamar Johnson
Professor of Education
University of California
Los Angeles, California 90024

Dr. Frederick C. Kintzer
Associate Professor of Education
University of California
Los Angeles, California 90024

Dr. Marvin C. Knudson
Executive Director
Arizona State Board of Directors
for Junior Colleges
Phoenix, Arizona 85007

Dr. Leland Medsker
Center for Study of Higher Education
University of California
Berkeley, California

Mr. W. John Minter
Special Programs in Higher Educ.
WICHE
Boulder, Colorado 80302

Dr. Gairdner B. Momet
Professor of Zoology
Goucher College
Baltimore, Maryland 21205

Dr. James W. Reynolds
Professor & Consultant in
Junior College Education
The University of Texas
Austin, Texas 78712

Dr. Raymond Schultz
Professor of Higher Education
Florida State University
Tallahassee, Florida

Dr. G. Ledyard Stebbins
Professor of Zoology
University of California
Davis, California 95616

APPENDIX E

NSF BIOLOGY INSTITUTE PARTICIPANTS TO WHOM THE
OPINIONNAIRE WAS SENT

Mr. Richard Adler
Instructor of Biology
Foothill College
Los Altos Hills, California

Dr. John Bamrick
Instructor of Biology
Lora's College
Dubuque, Iowa

Dr. Marjorie Behringer
Asst. Prof. of Biology
University of North Dakota
Grand Forks, North Dakota

Mr. Stephen Bingham
Instructor of Biol. Sciences
Eastern Arizona College
Thatcher, Arizona

Dr. Hazel G. Bonner
Instructor of Biology
Hampton Institute
Hampton, Virginia

Mr. Gerald Boos
Instructor
Yankton College
Yankton, South Dakota

Dr. Harold Bretz
Instructor
Illinois Institute of Tech.
Chicago, Illinois

Mr. Bruce Burkhart
Instructor of Biology
Rio Hondo Junior College
Whittier, California

Mr. Glenn Campbell
Instructor of Biology
Ferris State College
Big Rapids, Michigan

Mr. William C. Carden
Instructor of Biological Sciences
Grossmont College
El Cajon, California

Miss Sally Connolly
Instructor
Westchester Community College
Walhalla, New York

Mrs. Nadine Donchy
Instructor of Biology
Clarion State College
Clarion, Pennsylvania

Miss Judith Giles
Instructor of Biology
Agnes Scott College
Decatur, Georgia

Miss Marie A. Gilstrap
Instructor of Biol. Sciences
Highline College
Midway, Washington

Mr. Allen Gravitz
Instructor of Life Science
Sacramento City College
Sacramento, California

Dr. David F. Gruchy
Instructor of Biology & Zoology
William Carey College
Hattiesburg, Mississippi

Mr. Frank Guadanoli
Instructor
Western Wyoming College
Reliance, Wyoming

Mrs. Jeanne Kangas
Instructor of Biology
Christian College
Columbia, Missouri

APPENDIX E (Continued)

Mr. Ronald Knaus
Instructor of Biology
Fresno City College
Fresno, California

Mr. Alan McCormack
Instructor
State College
New Platz, New York

Mr. James A. McHenry
Instructor of Biology
Fresno City College
Fresno, California

Mr. Erick Meyer
Asst. & Assoc. Prof. of Biology
Concordia Lutheran Junior College
Ann Arbor, Michigan

Mr. Richard R. Nord
Instructor of Biology
Wisconsin State University
LaCrosse, Wisconsin

Mr. Claudio Perez
Instructor of Biology
Laredo Junior College
Laredo, Texas

Miss Barbara Pope
Instructor of Biology
Chabot College
Hayward, California

Miss Cecelia Reuss
Instructor of Biology
Cardinal Stritch College
Milwaukee, Wisconsin

Mr. King Richeson
Instructor of Biology
Midway Junior College
Midway, Kentucky

Mr. Robert Ross
Instructor of Biology
North Central Michigan
Petoskey, Michigan

Mr. Eddie Shellman
Biology Instructor
Central Florida Junior College
Ocala, Florida

Mr. Charles Stores
Biology Instructor
Mount Vernon Junior College
Washington, D. C.

Dr. Samuel Townsend
Instructor of Biol. Sciences
Kalamazoo College
Kalamazoo, Michigan

Mr. Richard L. Verch
Instructor of Biol. Sciences
Bay de Noc Community College
Escanaba, Michigan

Mr. Harvey Waldron, Jr.
Asst. Prof. of Biology
University of Idaho
Moscow, Idaho

Mr. Richard E. Wendt
Biology Instructor
Jackson County Community College
Jackson, Michigan

Sister Dorothy Wood
Instructor of Biology
COL Alverno College
Milwaukee, Wisconsin

Mr. Gail Dean Zimmerman
Instructor of Life Sciences
Casper College
Casper, Wyoming

APPENDIX F

C A S P E R C O L L E G E
Casper, Wyoming

Sandusky Branch
Bowling Green State University
Sandusky, Ohio

Dear Sirs:

I am now conducting a study of curricular offerings by two-year schools and university branches of the North Central Association. My first approach is to check the catalog statements concerning the course or courses involved.

If you would please furnish me with a current catalog, it would aid me in finishing the study. I have received catalogs from all but a few of the approved schools. If there is a charge for the catalog, please notify me and I will promptly remit the fee.

Thank you for your kind consideration.

Sincerely,

Lloyd H. Loftin
Dean of Students

LHL/bf

C A S P E R C O L L E G E
Casper, Wyoming

Chairman of the Zoology Department
Kansas State University
Manhattan, Kansas

Dear Sir:

In the continuing battle to upgrade our curricular offerings, we have been somewhat concerned over the teaching of science, particularly life science, in our own school situation. Admittedly there has been much discussion and the literature is replete with data of what should and should not be taught on the 13th and 14th year level as it relates to the general education function, particularly as it serves as a foundation for subsequent transfer into the 15th and 16th year. One thing is clearly evident and that is that there is such a variability in course offerings as to cause us some alarm and we have therefore set ourselves to the task of trying to determine in a more reliable fashion what the day to day practitioner feels is important rather than an inherited lock step from the past.

We are not unaware that all institutions are inundated with surveys and we were hesitant to ask for your assistance. On the other hand, it appears to us that no one has a more objective view of the product of the life science program than you. Specifically we attempt to determine what should be covered in the general education core in life science? What course offerings in life science are more suitable for the terminal student? What effect would a common life science core curriculum have on the community college life science curriculum per se? In summary, it appears that while we know what is now being offered in the community college, our question is, what should be offered?

It appears to us that the answers to these questions can best be offered by you from experiences at your institution. If you would assist us in this survey, we would be most grateful if you would complete and return it in the stamped self-addressed envelope.

Sincerely,

Tilghman H. Aley
President

Lloyd H. Loftin
Dean of Faculty

LHL/bf

C A S P E R C O L L E G E
Casper, Wyoming

Dr. James W. Reynolds
Professor and Consultant
in Junior College Education
College of Education
The University of Texas
Austin, Texas

Dear Dr. Reynolds:

We are in the process of completing a study on the life science curriculum of the community junior college. The first task was to determine what was now being offered at this level and what prerequisites, etc. are now in force. The second phase of the study was to determine what the junior college instructor and senior college life science chairmen feel should be offered in the thirteenth and fourteenth year in the junior college.

Since you are at the forefront of educational knowledge and since you are recognized as a national authority in the area of education, I am asking for your help.

Enclosed is a copy of the questions and statement which was sent to junior and senior college instructors in a nineteen-state area. I hope you will use this as a frame of reference for your views as to what should and what probably will occur in life science education on the junior college level. You may use any means of replying you desire, for it is your sincere feelings about the future that is most important.

This paper is to be compiled and mailed to those who are interested in its results. If you do not wish to be quoted, please state your desires and your contributions will be noted anonymously.

I hope you will take time to read the instrument and make appropriate remarks about those areas you feel deserve your consideration.

I wish to thank you for your time and consideration concerning this study.

Sincerely yours,

Lloyd H. Loftin
Dean of Faculty

LHL/bf

APPENDIX G

OPINIONNAIRE

Dear Biology Instructor:

First of all let me state that we are interested in what SHOULD be done in the Life Science Program of the Community College of the North Central Association, and particularly in the Zoology area.

Most of the questions, statements and alternatives in this instrument have been generated by practices found to exist in the Community Junior Colleges of the North Central Association. Some of the alternatives have been added because they seem logical at this time. Other possibilities have been deleted because of a lack of space. Since this represents what is being done in the colleges of the association my question becomes: Are these the best approaches?

It is our hope that you will complete this instrument and answer as to what SHOULD be the practice(s) in the Community Junior College. You are most intimately associated with the products of these programs in the life sciences and should be the most logical person to indicate what these practices should be. Some of the questions, statements and alternatives are not indicated as being in existence in colleges of the North Central, but we feel should be explored so they are added to increase the scope of the instrument.

Some directions for completing the instrument.

For the most part the directions for completing the survey are given in the instrument. However, those items that are multiple choice, unless directed otherwise, should be answered by selecting only one of the alternatives provided. If you do not agree with any of the alternatives provided then: a.) select the one with which you would most likely agree, and then, b.) in the space provided at the bottom of the sheet, indicated by a number corresponding to the number of the item, write in a comment concerning that item as to why you agree or disagree and what changes you would suggest. These comments should prove to be most valuable in assessing practices that should be in force. A few items have an * before the number of the item. This indicates that more than one alternative may be selected if you deem it necessary.

-2-

We are looking for educated prejudice and hope you will express yourself on these subjects. The instrument can be completed in approximately thirty minutes. It would take sometime longer than this if additional comments are made. We hope that you will take the time to complete this instrument and return it to us for analysis. If you would care for a copy of the results, please indicate your desire by placing a checkmark in the square at the bottom of the page and enclosing your name and address.

Thank you for your time, effort and considered opinions on this timely subject.

Sincerely,

Lloyd H. Loftin
Dean of Faculty

LHL/bf

Yes, I would like a copy of the completed study.

(1) Check what you would consider to be an adequate period of time to properly cover the course content of each of the listed courses if offered to Biology Majors. (Place an "X" in the appropriate box.)

	General Biology	General Zoology	General Botany	Human Anat.- Physiology	Human Anatomy	Human Physiology	Comparative Anatomy	Invertebrate Zoology	Vertebrate Zoology	Comp. Animal Physiology	Vertebrate Embryology	Genetics	Ornithology	Entomology	Histology	Ecology	Evolution	Nature Study	
One Semester																			
One Year																			

(2) Repeat here but for Non-Biology Majors.

One Semester																			
One Year																			

- (3) A General Biology course sufficient in content to equal or replace General Zoology and/or General Botany:
- should be one semester in duration.
 - should be one year in duration.
 - cannot be covered even in one year.
- (4) To meet the general education needs of the terminal student, General Zoology or General Botany should:
- be offered for one semester each.
 - be offered for one year each.
 - not be offered for this group.

Comments Question #1	Comments Question #2	Comments Question #3	Comments Question #4

- (5) If a student takes General Biology first and then takes General Zoology or General Botany the hours of credit in General Biology should be:
 a.) granted in full. b.) reduced. c.) withheld.
- (6) If a student takes General Biology after completing either General Zoology or General Botany, the credit in General Biology should be:
 a.) granted in full. b.) reduced. c.) withheld.
- (7) Full credit in General Biology should be allowed towards a biology major if taken first in the sequence:
 a.) no. b.) yes. c.) yes, if not of the survey type.
- (8) Assuming that one hour of lecture per week per semester equals one semester hour credit, how many hours should be spent in laboratory to equal one semester hours credit?
 a.) one hour. e.) five hours.
 b.) two hours. f.) six hours.
 c.) three hours. g.) no credit should be given for time in laboratory.
 d.) four hours.
- * (9) The high school senior honor student should be allowed to take which of the following community junior college life science courses for college credit?
 a.) General Biology. e.) Comparative Anatomy.
 b.) General Zoology f.) Invertebrate Zoology.
 c.) General Botany. g.) Others. (Please list) _____
 d.) Human Anatomy-Physiology h.) No course for college credit.

Comments Question #5	Comments Question #6	Comments Question #7	Comments Question #8

(10) How many semester hours of life science should be required for an Associate of Arts Degree?

- a.) None.
- b.) 4 hours.
- c.) 6 hours.
- d.) 8 hours.
- e.) 10 hours.
- f.) 12 hours.
- g.) 14 hours.
- h.) more than 14 hours.

(11) A senior college should accept all the credits earned by a student in life sciences in a regionally accredited Community Junior College.

- a.) yes, all credits.
- b.) yes, if college level courses.
- c.) no.

(12) What should be the minimum number of semester hours of zoological science credit offered in the 13th and 14th years of the Community Junior College?

- a.) 8 hours.
- b.) 12 hours.
- c.) 16 hours.
- d.) 20 hours.
- e.) 25 hours.
- f.) 30 hours.
- g.) 35 hours.
- h.) 40 hours.
- i.) more than 40 hours.

(13) A course in Nature Study should be offered for:

- a.) transfer credit.
- b.) local graduation credit only.
- c.) as a community service.

Comments Question #10	Comments Question #11	Comments Question #12	Comments Question #13

(14) Please indicate three things about each listed course by circling the appropriate number for each item asked. Example: If you feel that General Biology, one semester in duration, should be 2 hours lecture, 4 hours lab and 4 hours credit, then circle the number as shown below. The "V" in the third column would indicate that credit should vary between two courses of the same description and duration.

	General Biology One Semester	General Biology One Year	General Zoology One Semester	General Zoology One Year	General Botany One Semester	General Botany One Year	Anat.-Physiology One Semester	Anat.-Physiology One Year	Human Anatomy	Human Physiology	Comparative Anatomy	Invertebrate Zoology	Vertebrate Zoology	Comp. Animal Physiology	Vertebrate Embryology	Genetics	Ornithology	Entomology	Histology	Ecology	Evolution	Nature Study
Hours in Lect. per Week	0 <u>2</u> 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6
Hours in Lab. per Week	0 2 3 <u>4</u> 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6	0 2 3 4 5 6
Sem. Hours Credit for Course	2 3 <u>4</u> 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V	2 3 4 5 6 V

Comments Question #14

- (15) A General Biology course for Liberal Arts or General Education majors should contain:
- a.) materials usually covered in General Zoology and General Botany.
 - b.) materials on plants, animals and humans.
 - c.) an integrated course where plants, animals and humans are used only as examples to demonstrate a process, function or structure as well as the chemical and physical aspects of life.
 - d.) those materials of Botany, Zoology, Physiology and Anatomy that deal most directly with the human implications.
- (16) A General Biology course for biology majors should contain:
- a.) materials usually covered in General Zoology and General Botany.
 - b.) materials on plants, animals and humans.
 - c.) an integrated course where plants, animals and humans are used only as examples to demonstrate a process, function or structure.
 - d.) those materials of Botany, Zoology, Physiology and Anatomy that deal most directly with the human implications.
- (17) If two courses of the same duration in General Biology are offered by an institution they should vary in:
- a.) theory content.
 - b.) laboratory content.
 - c.) both theory and laboratory content.
 - d.) emphasis only, with content basically the same.
- (18) A General Zoology survey course of one semester duration should be sufficient to meet the needs of a Zoology major.
- a.) yes.
 - b.) no.
 - c.) yes, if combined with a General Biology survey course.
 - d.) yes, if combined with a General Botany survey course.

Comments Question #15	Comments Question #16	Comments Question #17	Comments Question #18

(23) Laboratory sessions for the terminal student should be considered as:

- a.) not essential for this type student.
- b.) not essential since pertinent materials could be covered in demonstration or audio-visual materials.
- c.) needed to show a unique phase of science.
- d.) an integral part of science teaching regardless of the student being taught.

(24) Laboratory sessions in General Biology for the Adult or Evening School students should be considered as:

- a.) not essential for this student.
- b.) needed to show a unique phase of science.
- c.) not essential since pertinent materials could be covered in demonstration or audio-visual materials.
- d.) an integral part of science teaching regardless of the student being taught.
- e.) necessary to give adequate time to cover all of the material contained in the course.

(25) Should the Liberal Arts major or general education student:

- a.) have a General Biology course especially designed to meet their life science requirement.
- b.) take a General Biology course designed to meet the needs of the life science major and non-major alike.
- c.) be required to take either General Zoology or General Botany to fulfill the life science requirement.

(26) Should a liberal arts major or general education student who possesses the proper prerequisites be allowed to take any biology courses offered at the institution as a fulfillment of elective credits:

- a.) yes.
- b.) no.

Comments Question #23	Comments Question #24	Comments Question #25	Comments Question #26

- *(31) Offering more than one kind of General Zoology course at an institution can be justified in order to serve:
- a.) Zoology majors and pre-medical students.
 - b.) Zoology majors and non-life science majors.
 - c.) Zoology majors and night school students.
 - d.) Zoology majors and all other students.
 - e.) Cannot be justified.
- (32) The total number of semester hours of credit in life science that should be required in the non-life science related terminal curricula is:
- a.) none.
 - b.) 3 semester hours.
 - c.) 4 semester hours.
 - d.) 5 semester hours.
 - e.) should vary with curriculum.
- (33) If a life science course is to be included in the terminal curricula the course should be offered for this group only:
- a.) yes.
 - b.) no.
- (34) If a life science course is to be included in the terminal curricula the student should:
- a.) take the course(s) he desires as long as he has the prerequisites.
 - b.) take a life science course structured for the terminal student.
- *(35) Which of the following courses should be a part of the curriculum of the terminal student:
- a.) General Biology, one semester in duration.
 - b.) General Biology, two semesters duration.
 - c.) General Zoology or General Botany, one year of either.
 - d.) General Zoology Survey and General Botany Survey, one semester of each.
 - e.) General Biology Survey and General Physical Science Survey, one semester each.
 - f.) Biological Science course is not essential in the terminal curricula.

Comments Question #31	Comments Question #32	Comments Question #33	Comments Question #34

- (36) Human Anatomy and Physiology should be taught as:
- a.) a unified course where the anatomy and its corresponding physiology are covered simultaneously.
 - b.) two separate courses, Human Anatomy first followed by Human Physiology.
 - c.) two separate courses, Human Physiology first followed by Human Anatomy.
- (37) How closely should the life science curriculum of a Community Junior College adhere to that of the Senior College or Colleges to which the Junior College life science major transfers?
- a.) They should adhere very closely if not duplicate the Senior College(s) curriculum.
 - b.) There should be some cooperation with the Senior College, but the Junior College should basically form their own curriculum.
 - c.) The Junior College should approach the curriculum with the needs of all of its students in mind.
- (38) Should some advanced life science courses (Ecology, etc.) be offered only during the summer term?
- a.) yes.
 - b.) no.
- (39) A course in Genetics should be taught:
- a.) with a concurrent laboratory.
 - b.) with an optional laboratory.
 - c.) without a laboratory session.
- (40) Have you considered initiating a "core curriculum" in your life science program?
- a.) yes.
 - b.) no.

Comments Question #36	Comments Question #37	Comments Question #38	Comments Question #39

- (41) If a "core curriculum" in the life sciences is developed by one or more senior colleges, to which a majority of your majors transfer, the "core" would:
- force an alteration of your curriculum.
 - weaken your life science department.
 - cause the better students to not attend your institution.
 - probably not cause a change.
- (42) If a "core curriculum" in the life sciences is developed by one or more senior colleges, to which a majority of your majors transfer, your institution should:
- try to offer the same "core".
 - offer only the introductory biology, chemistry, physics and mathematics for the 13th and 14th year.
 - offer only the physical science and mathematics prerequisite to the "core".
- (43) Should "Selected Reading in the Life Sciences" or "Student Projects" or "Student Research" be offered by the Community Junior College for transfer credit?
- yes.
 - no.
- (44) During the freshman year a life science major should be encouraged to:
- take an introductory biology course along with mathematics and/or chemistry.
 - take mathematics and chemistry as a freshman preparatory to the first life science course in the sophomore year.
 - defer life science courses until the junior year and furnish the physical science and mathematics requirements for that major.
- *(45) Which of the following physical science and mathematics programs should you require of a life science major in the 13th and 14th year?
- Inorganic Chemistry.
 - Organic Chemistry.
 - Biochemistry.
 - Mathematics through Calculus.
 - Probability and Statistics
 - General Physics
 - Geology

Comments Question #41	Comments Question #42	Comments Question #43	Comments Question #44

*(49) Which of the following should be prerequisites for General Biology?

- a.) no prerequisite necessary.
- b.) High School Biology.
- c.) High School Advanced Biology.
- d.) High School Chemistry.
- e.) A minimum composite or natural science score on a national achievement examination.

*(50) The prerequisite(s) for a full year General Zoology course should be:

- a.) High School Biology.
- b.) High School Chemistry.
- c.) College level General Biology.
- d.) a minimum natural science and composite score on a national achievement test.
- e.) no prerequisites needed.

(51) General Zoology of one years duration should be the prerequisite for all other Zoology courses in the undergraduate curriculum.

- a.) yes.
- b.) no.

*(52) A community junior college is justified in limiting its life science enrollment by requiring the prospective student to:

- a.) get permission of the instructor.
- b.) meet prerequisites.
- c.) have a minimum natural science and/or composite score on a standardized national achievement examination.
- d.) possess a minimum cumulative high school grade point average.
- e.) limiting enrollment by these means cannot be justified.

Comments Question #49	Comments Question #50	Comments Question #51	Comments Question #52

- (53) The prerequisites for life science courses should be viewed as:
- barriers keeping a student out of a course until all requirements are met.
 - suggestions of preparation necessary to gain optimally from the course.
 - could be viewed as both suggestions and barriers.

(54) Which of the courses listed at the left should be required prerequisites for the courses listed in the chart. If more than one prerequisite should be required list each. To record your choice for any one course prerequisite, place the letter preceding the prerequisite(s) in the appropriate box in the chart. If no prerequisite should be required leave the box blank.

PREREQUISITES

- A. Gen. Biol., One Sem.
 B. Gen. Biol., One Year
 C. Gen. Zool., One Sem.
 D. Gen. Zool., One Year
 E. Gen. Botany, One Sem.
 F. Gen. Botany, One Year
 G. Inorganic Chemistry
 H. Organic Chemistry
 I. Biochemistry
 J. Finite Mathematics
 K. Calculus
 L. General Physics
 M. High School Chem.
 N. High School Biol.

General Biology One Semester	General Biology One Year	General Zoology One Semester	General Zoology One Year	General Botany One Semester	General Botany One Year	Anat.-Physiology One Semester	Anat.-Physiology One Year	Human Anatomy	Human Physiology	Comparative Anatomy	Invertebrate Zoology	Vertebrate Zoology	Comparative Animal Physiol.	Vertebrate Embryology	Genetics	Ornithology	Entomology	Histology	Ecology	Evolution

- (55) General Biology should be considered a remedial course and not offered for college credit:
- yes, this statement is true.
 - no, for there is a need for such a course on the college level.

Comments Question #53	Comments Question #54	Comments Question #55

VITA

Lloyd Hughes Loftin

Candidate for the Degree of

Doctor of Education

Thesis: A SURVEY OF THE ZOOLOGICAL COURSE OFFERINGS IN THE TWO-YEAR JUNIOR COLLEGES OF THE NORTH CENTRAL ASSOCIATION COMPARED TO THE COURSES RECOMMENDED BY A PANEL OF JUDGES, WITH IMPLICATIONS AS TO FUTURE TRENDS

Major Field: Higher Education

Biographical:

Personal Data: Born near Wilson, Oklahoma, October 3, 1928, the son of Luther Q. and Nellie Loftin.

Education: Attended elementary schools at Wilson and Seminole, Oklahoma and Altamont, Illinois; graduated from Altamont Community High School in 1946; received the Bachelor of Science degree from the Eastern Illinois University, with a major in Botany, in May 1950, received the Master of Science degree from the Oklahoma State University, with a major in School Administration, in June 1956; completed requirements for the Doctor of Education degree in May, 1968.

Professional experience: Entered the United States Air Force and served four years as an instructor at the School of Aviation Medicine, Gunter Branch, 1951-55; taught biology and was chairman of the science department, Ponca City, Oklahoma Senior High School from September 1956 to May 1963; taught zoology and microbiology 1963, Director of Student Financial Aids 1964, Dean of Students 1965 and Dean of Faculty until the present at Casper College, Casper, Wyoming.

Professional organizations: Presently a member of National Education Association (Life), Phi Delta Kappa, American Association of Higher Education, American Association for the Advancement of Science, American Institute of Biological Scientists and American Association for Microbiologists.