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ORGANIZATION FOR TROPICAL STUDIES

Apartado 16

Ciudad Universitaria

TEACHING FOR THE ORGANIZATION FOR TROPICAL STUDIES

The Organization and Its Instructional Program

The Organization for Tropical Studies is a consortium of universities established to foster education and research directed at the use of tropical areas to expand knowledge particulary in the sciences. To achieve these objectives, the member universities have established through the Organization for Tropical Studies what is in effect a joint graduate department of tropical studies. This department is essentially an extention of the research and graduate programs of the individual universities. It is headed by the Executive Director who is appointed by the Board of Directors of the Organization and operates under its direction. The operating center for the Organization is currently at the University of Costa Rica.

A very important part of the program of the Organization for Tropical Studies is the provision of a graduate-level, educational program available to students in all colleges and universities of the Americas. Courses in this program become intergral parts of the graduate programs of the participants and are accepted for graduate credit by all member universities. They are of the high academic level characteristics of those offered by the member universities. The Organization is dependent upon its teaching faculty for maintenance of this level.

O.T.S. does not have a permanent, full-time faculty. Instead, its instruction is provided by visiting professors drawn from universities and other educational or research institutions throughout the Americas. These are short-term appointments, usually made on the basis of released time of the faculty members from parent institutions. Qualifications for teaching with O.T.S. are essentially those for major faculty positions at the member universities.

O.T.S. is currently conducting three core courses, each taught twice annually in the Republic of Costa Rica. Expansion, both academically and geographically, is expected in the near future. Currently, the courses are of 8 weeks duration, offered during February and March and July and August. Each is assigned eight semester hours of academic credit. Courses selected for presentation are those that can be taught effectively only in a tropical environment. It follows that all are field oriented, with essentially seven of the eight weeks of the period spent at field locations. Most of the courses are ecologically oriented, and most utilize essentially all of the major ecological areas available in the Republic.

The core of courses currently being offered includes the Fundamentals of Tropical Biology - an Ecological Approach, Advanced Tropical Botany, and Advanced Tropical Zoology.

The Fundamentals course is particularly appropriate for biology students in preliminary stages of graduate work, and is designed to provide an understanding in depth of the principles of ecology as they operate in the tropics. It includes lectures and seminars, group field problems, and individual problems introducing students to approaches to research in the tropics. It repeats in emphasis each time it is offered.

The two advanced courses are designed for advanced graduate students specializing in the areas with which the courses deal. The specific topics to which they are devoted vary from offering to offering depending upon need from the standpoint of graduate students in the various universities, judgement of timeliness by the Organization's Education Committee, and available faculty. Although more limited in scope than the Fundamentals course, each Advanced course emphsizes principles which can be best studied in the tropics.

The Teaching Faculty

As indicated above, the teaching faculty is engaged on a short-term basis on release from institutions with which they hold permanent assignments. Although initial contacts and tentative arrangements may be made with them by the Organization's Education Committe, by Committees for Tropical Studies at member universities, or by individuals, final arrangements and appointments are made by the Executive Director.

Generally, two types of faculty are engaged: Full-term faculty who are appointed for periods of two and one-half months and visiting scientists who are appointed for periods of approximately two weeks. Full-term faculty members are employed on a released-time basis from their parent institution. In many instances, they will remain on salary at their parent institution and be placed on off-campus assignment with the Organization for Tropical Studies. In other cases, the Organization will reimburse either the parent institution or the individual faculty member at a monthly rate equivalent to his salary and fringe benefits from his major employer. Faculty on academic year appointments who serve during the summer months can be employed at a monthly rate equivalent to that received during the academic year. The concept is that the full-term faculty are released to O.T.S. for the period that is involved with neither decrease nor increase in salary. Visiting scientists are presumably interrupting their regular work without replacement to serve O.T.S. for a short period of time. They are normally provided an honorarium in recognition of the increased work load this service will create. All faculty are provided tourist-rate, round-trip transportation by the most direct route from their home base to Costa Rica and are provided a per diem adequate to cover living expenses while serving O.T.S.

General Faculty Requirements

Successful participation as a faculty member for O.T.S. requires an unusual combination of talents: first and foremost, the individual selected must have recognized scientific and teaching ability; secondly, because it is necessary for faculty to work continuously with students in frequently adverse field conditions and with little regard for the calendar or the clock, leadership ability, flexibility, and resourcefulness are far more important than is true for conventional campus or field-camp courses; thirdly, the individual must have a knowledge of the tropical environment with particular respect to his discipline.

In fairness to prospective faculty members, the second qualification enumerated above bears some elaboration. As is previously indicated, approximately seven of eight weeks are spent at field locations. Although the locations are all scientifically exciting, living and working facilities frequently leave much to be desired. Inasmuch as permanent field stations have not as yet been established, ad hoc facilities including hotels in small towns, guest houses on Ministry of Agriculture stations and private fincas, pensions, and field stations of others must be used. At these locations, living accomodations are frequently crowded and the food may be typically back-country Costa Rican. Lights are rarely entirely satisfactory, space for laboratory work is definitely limited, and only laboratory equipment which can be transported with the class will be available. The conditions are very unlike those at an established field camp.

Faculty must work with and live with the students. This means that there is continuous instruction during the waking hours of the day and continuous student contact. There is little or no time during the course for individual research of faculty. Furthermore, since all of the courses focus on ecological problems, there is little or no time available for mass preservation of specimens and, hence, the sessions should not be viewed as collecting expeditions. Because of the intensive nature of the courses, and the conditions under which they must be taught, an unusual degree of energy, resourcefulness, and enthusiasm is required. The success of the course depends squarely on the scientific and leadership ability of the faculty involved.

It should be emphasized that, for those who are willing to teach under these described conditions, work with O.T.S. can be an exceptionally rewarding experience. The participants are unusually well qualified graduate students who are eager for knowledge and unparallelled in enthusiasm. They are selected on a competetive basis from applications from a wide variety of colleges throughout the Americas, and as a consequence, both their academic ability and their intelectual curiosity are of a very high order. In their selection, consideration is given to their personal characteristics which would enable them to benefit fully from the course and contribute to its success.

Advanced Preparation

Advance preparation is necessary for all faculty members participating in the teaching program. It should be clearly recognized that this is a time-consuming activity. Ideally, faculty members planning to teach in the program should spend a period of several months in Costa Rica, pursuing their individual research and becoming familiar with the country, its environments, and its biota. Although this is possible for some, it is recognized that it is not for all. Service as visiting scientists frequently assists others in gaining familiarity with the country and additionally a better understanding of the O.T.S. teaching operation. This type of service, consequently, can often profitably preceed a period of full-term employment.

To permit adequate preparation, courses are planned well in advance. Insofar as is possible, full-term faculty are brought to Costa Rica for a period of one to two weeks, three months in advance of the course period. This permits coordination of logistics and development of course outlines with respect to field conditions. During this period, field sites are visited and those to be used are selected. Organisms of interest at these sites are ascertained, and potential field problems are identified. At this time, the course program is planned. Moreover, the timing of this visit is such that there is remaining time for final preparation by faculty members at their home universities

here extensive library and museum materials are available. The visit also establishes a better basis for communication between faculty members involved in the courses in overall preparation under the direction of the course coordinator. All full-term staff assemble in Costa Rica two weeks prior to the beginning of courses for final preparation.

It is very important that all lectures and field problems be prepared before the courses start, if at all possible. Stencils should be prepared in advance for hand-out materials to support lectures and for statements of objectives and procedures for field problems. The appended field-problem descriptions may be considered representative of an appropriate hand-out for this purpose. Although typewriters and secretarial services are available at the O.T.S. office in Costa Rica and a typewriter may be taken to the field with each course, time is limited after the staff assembles. Stencils can be run in Costa Rica.

An important part of course preparation is assembly of equipment and expendable materials. Although O.T.S. is accumulating a reasonably large inventory of field instruments and equipment, it is far from sufficiently complete to handle all types of research and field problems. Equipment and materials needed must be established well in advance so that lacking items can be procured before the course starts. In general, equipment should not be elaborate, and funds for equipment and teaching and research materials are limited. Course coordinators insure assembly of necessary equipment and materials, and other faculty must work directly with them in this regard.

Course coordinators, particularly, should establish contact with participants selected for their courses as soon as the participants are selected. As long before the course as is possible, students should be provided reading lists and other appropriate preparatory materials. Courses are far more successful when students have prepared for participation.

The Fundamentals Course

The Fundamentals of Tropical Biology - an Ecological Approach, is limited to 20 students. Its teaching faculty consists of: a course coordinator who is responsible for the course content, organization, and conduct; two full-term assistant or associate professors; four visiting scientists; a full-term graduate assistant; and a field assistant. All full-term faculty should be ecologically oriented in their specialties. A workable combination of faculty members is a vertebrate zoologist, an invertebrate zoologist, and a botanist, but other combinations may also be very effective. Visiting scientists provide additional breadth to the course and bring depth to specialties not represented by those of the full-term faculty. It is essential to the success of the course that the faculty work as a team and that other faculty members cooperate fully with the course coordinator in the development and execution of the course. They must be fully willing to accept and execute all assignments associated with the course that the coordinator directs.

As is indicated by the appended materials, the Fundamentals course generally spends from four to twelve days at each of four or five ecological areas in the Republic, in additon to San Jose. At each location, time is devoted to lectures and seminars, organized field problems, and individual research. All faculty are expected to work with each of these activities during the periods that they are with the course. The following description of faculty activities is typical of those for a fundamentals course but may vary

in detail as the course is continually refined.

Either prior to the beginning of the course or during the first few days, each participant selects, with faculty guidance, an individual research problem which he will pursue throughout the entire period at each field site. Each participant is assigned to a faculty advisor for research activities. Each faculty member, therefore, supervises the research of 6 to 7 participants and grades their research reports. Approximately one-fourth of the field time is devoted to individual research.

At a typical field site, the first one or two days are spent in orientation with respect ot the area and its biota. Each faculty member at that time with the course participates in this by taking groups of students into the field in the area and describing the salient features of the area and its biota. For example, the botanist with the group may point out the various types of plants to be found in this area in contrast with others, describe field identification characteristics of major plant groups, and collect with the class materials for more detailed lab study that night. This period provides a background for effective field problems and research during the remainder of the stay in the area.

Two to four days at each field site are devoted to group field problems. Each faculty member with the course, including visiting scientists, is in charge of two or three problems at each site. For this work, the class is sub-divided into three groups and only one of these groups is involved in each problem. Thus, if nine problems are conducted at a site, each group will participate in three. No problems are repeated at a given area.

A group field problem is, in effect, a limited scope, group research effort. The instructor in charge prepares for hand-out a statement of (1) the problem including summary background information and information relating to its pertenance to the ecological systems involved (2) procedures to be followed, (3) materials needed, and (4) thought-provoking questions. He discusses the problem fully with students the day before it is conducted. A problem usually involves collection of data for about one-half day and data analysis in the laboratory or field for about the same length of time. An oral report of the problem and its results is presented to all three groups of participants by one of the participant involved in the problem. The responsibility for oral presentation rotates among the participants in each group. Afterwards, the professor prepares a written summary of the problem and its results for mimeographing and distribution to all participants.

Generally, two lecturers are presented on each day of orientation and of field problems at each location. All faculty members with the course contribute to these. During a course, each full-term faculty will present 10 to 15 lectures. Each visiting scientist will usually present three to five.

Appended to this statement are typical materials from a fundamentals course including a lecture schedule, a group field problem with a short statement of its results and analysis, two abstracts of research reports from a student participants, and a logistics schedule. These materials are intended only as illustrations to indicate the organization and scope of a successfull course. The details may vary significantly, depending upon the coordinator and other faculty members involved.

The course coordinator is the major administrator of the course and additionally is a part of the teaching faculty. To perform his duties satisfactorily, it is best that he has served on the full-term faculty of the course previously. He must know the ecological areas of Costa Rica and their biota thoroughly. He may not necessarily be the

most experienced or distinguished academician on the faculty, but he must be a capable leader. He is charged with the responsibility of the organization and the conduct of the course which involves in addition to handling the course logistics, assignment to other faculty members of lectures, field problems, research supervision, and other teaching and operational activities. Although he participates directly in academic activities within his area of specialty, his administrative duties may prevent him from participating proportionately as fully in the academic presentation as other faculty members.

Assistant and associate professors are expected to prepare and present lectures, prepare and conduct group field problems, lead seminars, and direct the research of participants as assigned by the course director. Additionally, they are frequently called upon to assist in operational activities of the course. Their full cooperation with the course director is essential to the success of the course.

Visiting scientists are usually eminent scientists working in the field of ecology. They insure adequate coverage of all of the areas of knowledge with which it is felt that the course should deal and provide additional depth of coverage. Additionally, service as visiting scientists provides potential full-term faculty members for any of the courses with an opportunity to gain familiarity both with Costa Rica and the O.T.S. operation. The specialties represented by visiting scientists varies from course offering to course offering, depending upon the specialties of the full-term faculty.

Visiting scientists are normally expected to present lectures and conduct field problems in their areas of specialty. Further, they may be asked to provide special guidance to the research activities of participants that are engaged in the course.

In preparation for the course, the course coordinator works directly with the visiting scientists to assign topics for lectures and field problems. The participation of the visitng scientist becomes an integral part of the course organization.

Advanced Courses

As previously indicated, the advanced course are designed for students who have completed at least one year of graduate work and who have in most cases clearly selected their area of specialization. The scope of these courses is usually more limited than that of the Fundamentals course. The enrollment of each is limited to ten student participants.

The full-term staff of each advanced course consists of one major professor who also serves as the course coordinator, one assistant or associate professor, one graduate student assistant, and one field assistant. Two visiting scientists may be involved for periods of approximately two weeks each.

Inasmuch as the subjects to which the advanced courses are devoted differ from offering to offering, the format of presentation may also differ. Because the group is smaller and the participants are generally academically more mature than in the Fundamentals course, greater flexibility in both course organization and presentation is possible. In many instances, a general format of presentation not unlike that of the Fundamentals course, which has been previously discussed, has proved effective. In all cases, it is the intent of the advanced courses to present principles which bear particularly on the tropics and can be best presented through study in the tropics. Because this is true, even couses which may emphasize a narrow group of organisms embody broad principles of ecology.

Appended to this statement as illustrations are materials prepared for one course which has been successfully presented. These materials include a course outline, logistics schedule, a typical group field problem, and an abstract of two typical research reports prepared by participants. These materials are to be considered illustrative only and are in no way intended to dictate the organization nor the content of all advanced courses.

The major professor and course coordinator is responsible for the organization, presentation, and academic success of the course. To handle this job effectively, he should, of course, be an eminent scientist in the field to which the course is devoted. Additionally, he should have worked previously and extensively in the tropics and should have some previous experience in CostaRica. In many cases, he may select the faculty members to work with him, and in all cases he will approve of the selections that are made. With the help of his faculty, he structures the course and organizes its presentation. He controls the course logistics with the assistance of the O.T.S. Costa Rican office. Inasmuch as the mechanical problems associated with an advanced course are not as great as for the Fundamentals course, the course coordinator can serve as the major professor and will normally play a major role in the academic presentation.

The assistant or associate professors and visiting scientists in the advanced courses fill essentially the same role as they do in the Fundamentals course, and have essentially the same responsibilities. They are expected to cooperate fully with the course director and assume responsibility for those portions of the course that he assigns. As in the case of the Fundamentals course, it is essential that the faculty form a well organized team..

Communications Among Faculty

Because faculty members for any given course are frequently drawn from more than one university, and because the O.T.S. courses have no close parallel on North American campuses, full communication between faculty members involved during a given course period is essential, particularly during the period of course preparation. The meeting in Costa Rica three months in advance of the course is designed in part to facilitate this. It is particularly important that this be maintained by letter, telephone, meetings, or any other available means during the remaining period prior to course presentation. It is also essential that all faculty members, and particularly course coordinators, stay in close communication with the O.T.S. office in Costa Rica during the period of course preparation.

Application for Participation in the O.T.S. Faculty

Application for participation in the faculty may be made to the Executive Director, Organization for Tropical Studies, Apartado 16, Ciudad Universitaria, Costa Rica, C. A. Application materials should include a biographical sketch including previous experience in the tropics and in teaching field courses, a list of major publications, and the names of three scientists working in the same discipline who know the applicant well.

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Executive Director