

PURDUE UNIVERSITY

**International Education and Research
International Programs in Agriculture**



**PORTUGAL UNIVERSITY
INSTITUTES
DEVELOPMENT PROJECT**

(Contract AID/NE-C-1701)

**REPORT ON
SHORT-TERM STAFF ASSIGNMENT**

Submitted by
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Clemson, South Carolina

May 9 - June 28, 1985

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PORTUGAL UNIVERSITY INSTITUTES DEVELOPMENT PROJECT

Report on Short-term Staff Assignment

PURPOSE OF VISIT

My appointment as short-term advisor to the Instituto Universitario da Beira Interior (IUBI) in Covilha, Portugal, was primarily to function as a teacher in the area of management science. I was charged with offering a course entitled Management Science II for Clemson University credit. The focus was on advanced mathematical programming techniques. During my stay at IUBI, I also participated in discussions related to graduate studies, undergraduate programs, long-term planning for the Institute, and technical applications of management science methods. A daily itinerary of activities is provided in Appendix A.

As a result of my time spent at IUBI, I have great expectations for the continued growth and development of this campus. After a period of slow and selective expansion of its undergraduate curriculum, IUBI will be widely accepted as a valuable component of the Portuguese university system. My only concern is that IUBI not try to grow too quickly under the false impression that size, rather than quality, determines academic respectability. It is my strongly held belief that a graduate program in an academic discipline cannot be developed until a university has a proven undergraduate program already operating successfully in that area. I realize that there are exceptions to this argument, but they really are unique cases.

CONDUCT OF THE COURSE

The class, Management Science II, was scheduled to meet three times per week. Due to teaching commitments of some of the participants, and meetings scheduled by the Rector, we were forced to frequently reschedule class meetings. In addition, the majority of material was covered during the last three weeks of the course in recognition of the fact that the students had to concentrate their efforts on conducting their own classes during the first three weeks. We, therefore, maintained a fairly flexible schedule. Appendix B contains a detailed listing of the material covered during the lectures.

Four students who participated fully in the course were:

- Maria Margarida Marques dos Santos Baptista
- Joao Verissimo do Oliveira Lisboa
- Luis Antonio Nunes Lourenco
- Alberto Augusto Ferreira Pereira

In addition, Jorge Augusto Neves Wahnnon attended all lectures and participated in class but did not complete the graded material. He was one of the most attentive auditors that I have had in any of my classes. Both Lisboa and Pereira are graduate students at Clemson University, and Lourenco plans on attending Clemson University this winter. It is my understanding that Baptista will not be sent to Clemson University under the auspices of the current Agency for International Development contract and, therefore, will probably never receive credit for the course.³

I encountered a minimal language barrier during lectures. I believe that this was a result of both the good English skills of

the students in conjunction with the quantitative nature of the material covered. The important conceptual points were easily transferred. In general, I found the students had a firm grasp of quantitative notions, but there was a suggestion of weakness in the area of application to real problems.

The only real inconvenience was the lack of significant computing capacity. This should be alleviated when IUBI receives and installs its new computer system. With the information presented in the class, the students have the skills necessary to develop their own mathematical programming packages in the event that none are conveniently available or affordable. A good mathematical programming package is an important resource for a sound management program.

OBSERVATIONS OF IUBI FACILITIES AND FACULTY

Upon my arrival at IUBI, I was very pleasantly surprised by the quality of the physical plant. The AID advisors were all assigned quarters in new offices near the library and our lecture rooms.

The library is small, but their holdings contained a sound foundation in management science materials. The collection was sufficient for an undergraduate program, but it is not at a level necessary for maintaining a graduate program or significant faculty research. My only short-term suggestion would be that the library subscribe to a journal titled Decision Sciences. I make this suggestion because it is one of the best applied quantitative management journals. Interfaces, which IUBI currently receives, is another quality journal with an editorial emphasis on application papers.

The library also carries two other related journals, Operations Research and Management Science, but they both tend to be quite theoretical and loaded with complex notation. As I pointed out earlier, I believe that the management faculty would benefit from a continued exposure to problem application as opposed to elaborate theoretical extensions.

I have previously mentioned the existing computer facilities. I am sure that the IUBI staff is looking forward to the arrival of the new mainframe. It will certainly enhance IUBI's ability to offer quality undergraduate programs. It is a necessity for any projected expansion into engineering areas.

I was impressed with the faculty at the Institute. The resources, both human and monetary, being expended to upgrade the skills of the management faculty are commendable. Until I had spent six weeks in Covilha without my family, I did not really appreciate the tremendous personal sacrifices made by many of the faculty members who came to Clemson to earn graduate degrees. It is unreasonable to expect that many IUBI faculty members would be willing to leave their families in order to pursue a graduate degree. The institute should be willing to expend as much effort as necessary to allow faculty members to take their families with them when they are out of Portugal for extended periods of time. It should be willing to cooperate closely with AID personnel in order to develop reimbursement schemes that can complement university graduate assistantships. Some restructuring of AID disbursements combined with university assistantships can make the difference in whether or not a faculty member can bring family to the host university.

Another pleasant surprise was the skills and enthusiasm of the junior faculty members. IUBI has many young teachers who have completed the equivalent of a bachelors degree, and are teaching labs or lower level courses. I found these professionals to be intelligent and dedicated teachers who would love to continue on to do graduate work. These people are a valuable resource and should be encouraged by the administration to continue their education, either inside or outside of the Portuguese university system.

My only personnel concern is that IUBI should refrain from hiring too many of its own graduates. It is very important that a university represent as many views, techniques and academic backgrounds as possible. Hiring its own graduates may appear to be a convenient way for IUBI to expand in the short-term, but it may result in academic stagnation brought on by intellectual incest.

LONG-TERM ISSUES

During my time in Covilha, I was asked to take part in the discussions related to the long range development of IUBI as an academic institution. I was impressed by the enthusiasm generated by the administration for expanding the Institute into a major university, complete with graduate programs culminating in the doctoral degree. I would support these as very long-term goals. However, IUBI does not have the faculty, library, laboratories, or information processing facilities to seriously consider such an ambitious program for at least fifteen years. The most telling issue is that IUBI has yet to develop the academic respectability that is the very foundation for the construction of a meaningful graduate program. This foundation must be

based on an established and respected combination of undergraduate programs.

For this reason, IUBI should continue to concentrate on developing a core of perhaps ten strong and proven undergraduate degrees before it even begins to worry about the extensive resource development necessary to offer a quality graduate program. IUBI should avoid "fashionable" majors that are of no real benefit to its geographic region. "Robotics" is a prime example of an area that is currently high profile but of no real use to the region surrounding Covilha.

GENERAL OBSERVATIONS

I cannot begin to convey the degree of warmth and kindness offered by the Portuguese people. This is not only true for university personnel, but also for the residents of Covilha and Portugal as a whole. I had repeated opportunities to enjoy dinners and other social occasions throughout the country. I have two hopes for the years to come. From a purely selfish standpoint, I would like to return to Portugal at least once every two years. Second, I would like to see my many charming Portuguese "hosts" visit the United States in order that I might have the opportunity to repay their many kindnesses.

IUBI is a college that should be able to carve a very important place for itself in both the academic community and in its geographic region. It should not attempt to threaten the overall supremacy of the universities in Lisboa, Oporto, or Coimbra, but it should aim at having a few outstanding programs in areas of particular interest

to its region. For example, IUBI could have international scholars in the areas of textile-related energy issues. Given a skillfully defined mission statement, IUBI will continue to grow into a very good academic institution.

APPENDIX A

Daily Itinerary

DAILY ITINERARY

May 9 - June 29, 1985

- May 9 Left from Greenville/Spartanberg Airport
- May 10 Arrived Lisbon. Met by Joao Jose. Visited AID office in U.S. Embassy and then checked into hotel.
- May 11-12 Weekend spent sightseeing
- May 13 Met Alberto Pereira at airport
- May 14 Drove to Covilha with Pereira. Had dinner with Pereira family in Covilha. Moved into farmhouse
- May 15 Toured IUBI facilities, including library and computer, in the morning and worked in the library in the afternoon.
- May 16. In the morning moved into office and set up computer and met with Rector Morgado. Toured the area with Lisboa in the afternoon.
- May 17 Prepared lecture in the a.m. and taught class in the p.m. Attended reception in evening for visiting dignitaries from Evora and Lisbon.
- May 18 Weekend. Prepared breakfast for Pereira family. Toured mercado and grocery stores. Lunched with Pereira family and then went for a drive in the mountains.
- May 19 Weekend. Worked on class lecture in the morning. Prepared dinner for other AID advisors in the evening.
- May 20 Lecture preparation in the a.m.; class presentation in the p.m.
- May 21 Lecture preparation and class in the morning. In the afternoon, took other advisors to Fundao.
- May 22 Lecture preparation.
- May 23 Meeting with Rector Morgado in the a.m.; class presentation in the afternoon.
- May 24 Lecture preparation in the morning and drove to Sortelha with Lisboa and Pereira in the afternoon.

May 25 Weekend. Prepared breakfast for Gaddis and drove to Fundao in the morning. In the afternoon, drove to Guarda with Lisboa.

May 26 Weekend. Lecture preparation.

May 27 Lecture preparation and class.

May 28 Lecture preparation and class.

May 29 Lecture preparation.

May 30 Lecture preparation and class.

May 31 Lecture preparation.

June 1 Weekend, spent shopping

June 2 Weekend. Prepared Creole meal for U.S. advisors and families of Portuguese counterparts (15 adults and 6 children).

June 3 Lecture preparation and class.

June 4 Lecture preparation and class. Lisboa and Pereira had to miss class because of meeting with Rector.

June 5 All day meeting with Rector Morgado. In the p.m. make-up class for Lisboa and Pereira. Had dinner with Pereira family in the evening.

June 6 In the morning toured Monsanto and prepared lecture in the afternoon. Had dinner with Dean Brown in the evening.

June 7 Lecture preparation and meeting with Scientific Council in the a.m. Lunched with Lisboa family and then drove to Alcobaca with them. Stayed at Lisboa's mother's house.

June 8 Weekend. Toured Alcobaca, Obidos, and Alagarrota. Had dinner at house of Lisboa's in-laws.

June 9 Weekend. Toured Nazare.

June 10 Toured Fatima and Batalha in the morning and in the afternoon drove to Covilha.

June 11 Prepared lecture and examination and class presentation.

June 12 Lecture preparation.

June 13 Handed out take-home examination in the morning.

June 14 Collected examination.

June 15 Weekend spent sightseeing.

June 16 Weekend spent sightseeing.

June 17 Lecture preparation and class.

June 18 Lecture preparation and class.

June 19 Lecture preparation and class in a.m. Shopped in the p.m.

June 20 Lecture preparation and class. Evening spent preparing dinner for some of IUBI faculty.

June 21 Lecture preparation and class in the morning. In the afternoon drove to Oporto.

June 22 Weekend. Toured Oporto and coast to Viana do Castelo.

June 23 Weekend. Festival of Sao Joao in Oporto.

June 24 Returned to Covilha in the morning and prepared lecture in the afternoon.

June 25 Morning spent preparing lecture and class. In the afternoon prepared final examination. Drove to Salamanca in the evening.

June 26 Returned to Covilha in the a.m., and in the afternoon proofread final examination.

June 27 Handed out examination during morning. In the afternoon met with Rector Morgado and collected final examination. Had dinner with Pereira family.

June 28 Packed belongings in the morning. Drove to Lisbon in the afternoon.

June 29 Met my family at airport in Lisbon.

From 6/29 until 7/12, we toured in Portugal and Southern Spain.

July 13 Left Lisbon for U.S.

July 14 Arrived at home.

APPENDIX B

Class Schedule

Class Schedule

- May 17 Introduction and preview of material to be covered.
- May 20 Decision Analysis: Decision trees, decision rules, expected monetary value, conditional events, sampling with and without replacement, complex example.
- May 21 Decision Analysis: Expected value of perfect information, utility functions, risk averse and risk prone, basic reference lottery ticket.
- May 23 Linear Programming: Intuition and graphical review of important concepts.
- May 27 Linear Programming: Formal simplex algorithm, phase I/phase II example.
- May 28 Linear Programming: Simplex algorithm with bounded variables and example.
- May 30 Linear Programming: Sensitivity Analysis, graphical basis, range of insignificance, range of optimality, shadow prices, range of feasibility, economic interpretations, 100% rule, examples.
- June 3 Linear Programming: Parametric Programming with examples.
- June Linear Programming: Revised simplex algorithm with example.
- June 11 Linear Programming: Review for examination, duality, dual simplex algorithm, examples.
- June 12 Linear Programming: Parametric primal-dual simplex algorithm with example.
- June 17 Linear Programming: Goal programming formulation and solution routine.
- June 18 Integer Programming: Formulation tricks, branch and bound techniques, 0-1 solution algorithm using implicit enumeration, examples.
- June 19 Integer Programming: Continuation of 0-1 example.

- June 20 Integer Programming: Assignment and shortest route algorithms with examples.
- June 21 Integer Programming: Maximal flow problems with examples.
- June 25 Seperable Programming: Formulation and solution techniques.