1985

University of Central Florida 1985 Self Study Southern Association of Colleges and Schools: Department of Civil Engineering and Environmental Sciences Self Study Report

University of Central Florida. Department of Civil Engineering and Environmental Sciences

UNIVERSITY OF CENTRAL FLORIDA

1985
Self Study

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS

DEPARTMENT OF CIVIL ENGINEERING AND
ENVIRONMENTAL SCIENCES

SELF STUDY REPORT

UNIVERSITY OF CENTRAL FLORIDA

SELF-STUDY

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS

Final Report Date Completed: January 11, 1984

TITLE: SELF-STUDY REPORT OF THE CIVIL ENGINEERING AND ENVIRONMENTAL SCIENCES DEPARTMENT

Prepared by: Dr. Martin P. Wanielista
Dr. John N. Seaman
In Concurrence with the remaining CEES Faculty and Staff

Abstract

The Department of Civil Engineering and Environmental Sciences is organized as: three professors, five associate professors, four assistant professors, four instructors, one and one-half secretaries, and one and one-half secretarial assistants. The 1982-83 enrollment includes 193 undergraduate and 50 graduate students.

During the academic year 1983-84, the average faculty release time for research activities was 14.9 hours/week. Teaching activities were 20.6 hours per member and 4.5 hours of the time was spent on public service, committee and counseling activities.

Currently, there is emphasis on both research and teaching; however, by expansion in the graduate program, a higher percentage of the department's effort will be devoted to research. From the detailed studies, the Committee concludes:

1. Additional engineering and science related geology courses to strengthen the Civil Engineering course offerings and research efforts would be beneficial.

2. Faculty space for office work and research should be enhanced. This is expected with the new Center for Engineering and Business Administration. However, future growth plans require additional space.

3. Expansion of the graduate program is needed to keep pace with research activities and the high level of excellence enjoyed by the Department members. A focused high level of research exposure for one area in Civil Engineering and one in Environmental Engineering should be planned and executed to keep pace with national and state priorities.

4. Additional secretarial and technical assistance is needed.

1. PHILOSOPHY

1.1 Role in the University and the Community -

The functions of the Civil Engineering and Environmental Sciences Department include, but are not limited to:

- Development of curricula to meet the current and future needs for education in both the Civil and Environmental Engineering Areas.
- Provision of qualified faculty to teach the courses and conduct research.
- Management, coordination, and administration of all activities for which the department is responsible, such as:

    1. Research
    2. Course offerings
    3. Personnel
    4. Supplies
    5. Budget
    6. Coordination with community colleges
    7. Student advisement and counseling
    8. Capital expenditures
    9. Committees
    10. Facilities and equipment
    11. Community service
    12. Student organizations
    13. Consultant work
    14. Encouragement and promotion of student enrollment
    15. Undergraduate and graduate assistant program
    16. Support for technical organizations engaged in CEES oriented activities
    17. Extended education activities

- Support of the College of Engineering programs and activities.
- Coordination with other College of Engineering departments and UCF organizations as appropriate.
- The CEES Department serves the community in ways such as:

    1. Providing speakers for courses in Environmental and Civil Engineering activities, such as Water and Wastewater Operators Short Course (for certification), sinkhole detection, stormwater management, and others.
    2. Providing programs and speakers for various groups interested in various matters relating to engineering education, such as High School Career Days.
    3. Providing judges for local and state-wide science contests.
    4. Participating in technically oriented organizations engaged in CEES activities.

1.2 Evaluation and Projections

The CEES Department is meeting its present objectives in a highly creditable manner. This is due primarily to a well-qualified faculty and staff who are motivated to perform difficult workloads with enthusiasm and sincere dedication and willingly work long hours. The faculty average more than forty hours of work per person per week.

The real demand for the department's service applies to each of the specific functions outlined in the role statements above.

During the next decade, the demands on the Department are expected to increase primarily due to an expected increase in undergraduate and graduate students as well as the expansion of earth systems concepts including water resources, environmental engineering, transportation-urban systems, soils, and expansion of research involving public works management, construction, maintenance, and geology/geography interactions.

These demands will require increased budgets for additional faculty, facilities, equipment and expenses.

2. ORGANIZATION

2.1 Assigned Duties and Staffing

The Department is organized as follows:

- One Chairman, a professor
- Two other professors
- Five associate professors
- Four assistant professors
- Four instructors
- Secretaries and assistant secretaries (students)

This organizational approach will not work over the next ten year period. The changes anticipated are an expansion of faculty to twenty full-time and five visiting or part-time as well as a chairman, two program officers, an administrative assistant, and additional secretarial help.

These changes would improve the department's efficiency and effectiveness by providing adequate staff to fulfill the goals and objectives of the Department and providing additional staff to relieve the faculty of some of the administrative burdens that now must occupy their time in place of teaching, research, and service.

The Department is not adequately staffed to accomplish its function in terms of implementing all of the programs that are under consideration now. At this point in time, the faculty are doing a good job within the limits of staff and budget. At present, on the average, two adjuncts are used by the CEES Department per semester.

2.2 Supporting Structure

The supporting organizational structure of the College of Engineering is the best means to expedite the CEES Departmental responsibilities.

Members of the faculty are involved in the development of policy through the Dean's and Chairman's soliciting and acting upon reasonable suggestions and inputs from individual faculty and groups of faculty members. All faculty conflicts are resolved at the Chairman's level.

2.3 Projections

Information upon which to base decisions to facilitate planning now and over the next ten year period is generated through the chain of comand to the Departmental Chairman and faculty.

Continuous Departmental planning now and over the next ten year period is a management responsibility and, thus, part of all management jobs. There are no plans for changing departmental structure or procedures to facilitate cooperative decision making among all parties concerned. At this point, the structure and procedures are functioning smoothly and well.

3. EDUCATIONAL PROGRAM

3.1 Correlation of Program and Objective

The Civil Engineering and Environmental Sciences Department stresses student-faculty contacts through advising, counseling, and office hours. The faculty employs an open door policy, and each student gets special attention and encouragement from the members of the Department. Also, scholarships and assistantships, whenever funds permit, are made available to students.

CEES Department plans for future curriculum changes are made to fit the needs and demands of the community with emphasis on quality education.

The goals of the CEES Department will be major expansion of the (1) engineering geology approach to support in the areas of transportation-urban systems, soil systems, water resources and environmental engineering, and producing solidly educated graduates prepared to pursue their career objectives with confidence, and (2) chemical engineering and its relations with the environmental engineering program.

CEES will look at the expansion of CEES Computer and Chemical Engineering Programs as applied to construction, management of large buildings, maintenance function and similar, and curricula in environmental health. Other avenues of need that can be foreseen such as geography and planning will be exploited.

CES 4124, CES 4605 and CES 4609 are required as a sequence. Also sequenced are EGN 3704, EGN 3353, ENV 4404, ENV 4504, ENV 4433, and ENV 4434. A broad education is necessary in both Civil and Environmental Engineering education. These courses, such as EES 4202, EES 4204, ENV 4119, TTE 4004, ECI 4305 and CES 4605, are necessary. All the above courses are required courses. These courses present a comprehensive core in the area of concentration (option).

Courses offered are consistent with the Departmental goals. Careful evaluation is continually made to assure that an agreement between course offerings and Departmental purpose is maintained. Also, courses are available for the students to graduate on time.

The CEES Department develops its academic program at the resident centers by participating in the courses offered there through video taping as well as being physically at the centers. The courses at the resident centers are primarily done at the graduate level. Two graduate degrees are offered through the FEEDS program.

3.2 Admissions

The CEES Department believes that the admission policies at UCF are adequate. There are no special admissions policies for majors, and it is believed the current policies are sufficient. The grade point average for transfer students is 2.25 in the option and the engineering CORE areas.

The Community College program is capable of preparing the students for the academic program. This requires close coordination and cooperation between universities and community colleges to continually refine the curriculum so that difficulties are minimized.

3.3 Enrollment

The enrollment levels are shown in Table 3.1. The CEES Department is making special efforts to recruit students. Various members of the faculty visit high schools and community colleges to make presentations and discuss the goals of the Department.

3.4 Curriculum

Major Fields of Concentration	Faculty Qualified to Teach
o Structures	Carroll, Seaman
o Environmental Engineering and Water Resources	Wanielista, Cooper, Yousef, Taylor and Dietz
o Transportation	Leftwich, Kuo
o Geotech-Soil Systems	Kuo, Beck
o Construction	Rodriguez-Ramos, Leftwich

We also have four faculty who are qualified to teach certain courses in CEES and are classified as Ph.D. candidates who hold the rank of instructor and one associate professor doing only research. All the courses offered are consistent with Departmental philosophy.

Courses are added or deleted from the curriculum upon recommendation from the faculty and approval of the Chairmen and the Dean of the College of Engineering.

The number of credit hours for a course is determined according to the amount of material to be covered in the classroom and the amount of work required by the students in the course.

The effectiveness of the present program could be measured by the increasing demand for our graduates and the quality of work they are giving to their employers.

The CEES Department has carried the following courses with less than ten students:

EES 3104 (first time course was taught)
CES 6607 (graduate level)
TTE 5204 (graduate level)
ENV 5204 (graduate level)
ENV 6015 (graduate level)
ENV 6016 (graduate level)
ENV 6106 (graduate level)
ECI 6146 (graduate level)

TABLE 3.1

NUMBER OF MAJORS AND DEGREES AWARDED*

	Year				
	1978-79	1979-80	1980-81	1981-82	1982-83
# Enrolled (Civil Engineering)**	39	134	168	161	155
# Enrolled (Environmental Engineering)**	161	100	89	100	88
TOTAL:	200	234	257	261	243
Degrees Awarded:					
B.S.E. (Civil Engineering)	6	9	31	19	32
B.S.E. (Environmental Engineering)	26	14	10	7	12
M.S. (Civil Engineering/Sciences)	0	1	2	1	2
M.S. (Environmental Engineering/Sciences)	9	7	5	10	4
TOTAL:	41	31	48	37	50

* No minor is offered by the Department

** Enrollment figures include both undergraduate and graduate students in that discipline.

The CEES Department does not have any procedure for granting students either academic credit or advanced standing for knowledge acquired outside the classroom other than the credit by examination system which exists at the University.

In the CEES Department, the students are required to take the option which accounts for 75 percent of the area of concentration. The other 25 percent of the program can be taken in non-major electives. There are no experimental courses.

The system of pre-requisites in the Department is consistently enforced; however, a few exceptions may exist and they are considered on an individual basis.

The CEES Department receives reports from professions, industries, etc., specifying their needs. The curriculum is continually revised according to their needs and requirements. Fortunately, an increasing demand for graduates is noticeable, and there are more requests for graduates than the department can supply.

3.5 Instruction

One-hundred percent of the courses have outlines available to the students before they take the course and are distributed in class. The use of adjuncts is limited to situations of replacement time for research or EEO activities. Qualified adjuncts are used.

Student evaluation for the effectiveness of instruction is practiced in the Department. Also, reports from employers and demand on graduates would help in evaluating the program.

3.6 Other Activities

The CEES Department sponsors the ASCE Student Chapter. Outside speakers are invited to talk to the students on subjects of interest. Also, students are introduced to prospective employers.

3.7 Projections

The work of CEES will be in the same general areas as current directions. However, there will be a major expansion of the Engineering Geology approach as it supports water resources, environmental engineering systems, transportation systems and soil systems. The Department will look at expansion of other efforts in the Chemical Engineering areas and curricula in environmental health. Other areas such as geography and planning will be exploited.

There is no specific enrollment projection for any courses or programs. However, a stable number of students are enrolled in the Department.

4. FINANCIAL RESOURCES

4.1 Outside Funding

The Department is not involved in management of any special fund support; however, individual research grants have been awarded to various members of the faculty. For the last 2 years, the Department has had over one million dollars in research activities. In Table 4.1, the sponsored research in force for AY 83-84 is shown.

4.2 Auxiliary Activities

The Department has no auxiliary activities in force at this time.

4.3 Budget

Budgets are marginally adequate. This is primarily because of the research funding. Without research, the budget will be barely adequate.

Initial allocations do not reflect the Department's actual needs since it is a formally determined budget. However, research funds make up the difference. Allocations should be made available for operating, development and replacing laboratory supplies. Also, additional allocations should be made for faculty professional development through short courses, attending meetings, research initiation, etc.

4.4 Equipment

The OCO funds for the last 2 years were adequate and allowed the Department to purchase needed laboratory and research equipment. The needs are decided by the faculty according to a priority system. Any conflicts are resolved at the Chairman's level.

The regulations for spending OCO and Expense funds do not limit equipping the Department to best carry out its academic program in an efficient manner over the long range. The problem is lack of sufficient space.

TABLE 4.1

SPONSORED RESEARCH IN FORCE

		1983-1984
1.	Sludge Treatment/UCF-EIES	$ 5,000
2.	Catalytic Paint Drying & VOC Control/AES-EPA	100,020
3.	Submarine Tactics-Graphics/Navy Training/CAD-CAA	40,000
4.	Sinkhole Detection/UCF-EIES and DSR	6,156
5.	THM Precursors Removal-City of Melbourne/Environmental Protection Agency and City of Melbourne, Florida	229,218
6.	Coal Slurry Pipeline Water Quality/EPA	78,000
7.	Consequential Species of Heavy Metals in Highway Stormwater Runoff/State DOT and FHWA	50,000
8.	Mixing Zones for Stormwater/State DOT	40,000
9.	Best Management Practices/DOT	150,000
10.	Lake Toho Study/South Florida Water Management District	42,000
11.	Potable Water Treatment and TTHM's/UCF-EIES	8,000
12.	Drinking Water Models/EPA	125,699
13.	Phase II-Lake Eola Impacts and Designs/EPA	66,000
14.	Evaluation of New and Emerging Technologies in the Metal Finishing Industry/EPA and AES	51,500
15.	Boundary Integral Mechanics Code/NASA-Marshall	15,000
16.	Evaluation of Transportation Models That Can Be Adopted for Use in Small Urban Areas/UCF, DSR	5,000
17.	EPA Fellowship/State DER	6,820
18.	Mixing Zone Match/UCF, DSR	1,200
19.	Submarine Software Tracking II/US Navy	40,000
20.	Anti-submarine Warfare/US Navy	67,000
21.	Construction Site Design, An Analytical Approach/DSR	5,000
22.	Sinkhole Operations/State Insurance Commission	67,273
23.	Lake Jackson Bottom Muds, DER	40,000
		$1,238,886

5. FACULTY

5.1 Recruitment and Selection

Faculty are initially recruited through national and local advertising, letters from the Department Chairman, and personal contacts among the faculty. The faculty that are recruited and selected support the role and philosophy of the Department, based upon the need at the point in time of question. The final selection is made by the Dean of the College of Engineering with the approval of the Vice President of Academic Affairs.

The Professional Engineers exam is a non-academic consideration taken into account for faculty selection. Other factors that are taken into account would include factors like previous work experience and/or mililtary experience. The HEW pressures are not significant in the recruiting of engineering faculty. Economic considerations affect the choice of faculty in that almost all faculty come in at the Assistant Professor level.

Part-time instructors are used when faculty secure outside funding and thus cannot teach an assigned course.

5.2 Organization, Preparation and Growth

There are two main types of special organizations of the faculty that reflect sub-areas of interest. In the first area would be included factors such as the Sinkhole Institute, Transportation Systems Institute, and the Environmental Systems Engineering Institute. These provide a vehicle where faculty may get together and cooperate on specialized research and/or academic projects. A second area where the faculty get together is in committee activities which are part of the functioning of the College of Engineering. For example, faculty with an interest in computers will generally be found working on the computer committee as part of the College of Engineering.

Faculty preparation as related to earned degrees and experience are shown in Table 5.1.

The academic preparation of the faculty is adequate for both existing programs and proposed programs in terms of the quality of the backgrounds available; however, there are shortages in the number of faculty available to implement all the programs. We are currently seeking two new faculty positions.

The academic preparation is adequate for accreditation as reflected by the Engineering Council for Professional Development accreditation received by the College.

The training and competence of the faculty are quite able to support the purpose of the institution and the role of the Department in terms of the individuals available.

TABLE 5.1

ACADEMIC PREPARATION

Name	Degree Held			Held or Attended Specialized Training	Years Experience (Excluding Education)	Age	Years at UCF	Number of Funded Research Proposals (at UCF)	Professional Activity Number of Societies
	Bachelor	Masters	Doctorate						
Beck	X	X	X	SC*	10	39	1	5	3
Carroll	X	X	X	SC	13	38	12	7	5
Cooper	X	X	X	SC	10	36	5	7	5
Dietz	X	X	X	SC	6	31	2	2	8
Harper	X	X	In Progress	SC	5	32	5	2	5
Jackson	X	X	In Progress	None	14	38	4	0	2
Kuo	X	X	X	SC	13	44	3	3	4
Leftwich	X	X	X	SC	10	32	2	2	3
Palmer	X	X	In Progress	None	12	43	3	1	3
R. Ramos	X	X	X	SC	12	35	2	2	4
Seaman	X	X	X	SC	37	68	4	1	3
Smith	X	X	In Progress	SC	30	62	4	2	6
Snyder	X	X	In Progress	None	7	30	5	1	2
Taylor	X	X	X	SC	14	42	8	6	6
Wanielista	X	X	X	SC	16	42	14	22	8
Yousef	X	X	X	SC	15	53	14	14	8

*SC = short courses

Growth and development are measured through a series of formal documents (performance evaluation) and records collected by the Chairman of the Department and kept on file. These activities are regarded in part through personal recognition and in part through being considered for promotion.

5.3 Salaries

The salary levels appear to suggest that the institution can be reasonably assured of maintaining the faculty quality that is needed. Since 1973, there has only been two resignations in the Department. This indicated that the salaries are probably reasonably in line, although the shortage of the number of jobs available in some engineering fields may also be a factor.

Department Chairmen recommend salary increases based upon performance evaluation criteria, then the Dean has the final determination in all faculty salaries. The policies governing salary increases make the decision completely up to the Dean's judgement in terms of both the size of the salary increase and whether or not it should be given. This is done after listening to the Chairman's recommendations.

In all cases, the salary increases have not been consistent in keeping up with the cost of living. This is, in part, reflection of the fact that these are set by the State Legislature, the members of which may or may not adequately be aware of this lag. However, the salaries are in line with similar departments of other state universities in Florida and appear to be in line with those in the southeast. However, it is difficult to strictly compare salaries since there are other differences such as tax structures and cost of living within the various states.

5.4 Teaching Loads

The normal teaching load is twelve contact hours. The only basis for exceptions to this for faculty members is released time coming from funded research that will pay an appropriate part of the salary. Other exceptions are made in the case of the Chairman for administrative duties. The only officially significant factor in determining teaching loads is the twelve credit hour requirement.

Attempts are made to keep the class sizes to a reasonable number within the Department, although a few large classes are provided for the College at large to provide a balance for the productivity requirements of the State Legislature. The labs are compared to lectures on a three to one ratio basis; that is, 3 hours of laboratory is equivalent to one hour of lecture. Individual instruction and private instruction are marginally evaluated in that they are recognized as being an overload above and beyond the twelve contact hours. However, they do not count toward the reduction of the twelve contact hours at this time.

5.5 Evaluation, Security and Promotion

In evaluation of faculty loads, no weights are given to: committee assignments, administrative duties, thesis supervision, directing of independent study and directing of extracurricular activities. The twelve hour teaching load requirement is implemented strictly through teaching courses. Promotion and Tenure follow University Policy and Procedure.

5.6 Working Conditions

Not all of the faculty have adequate office and laboratory facilities since several of the faculty must share their office and laboratory with other persons. This inhibits conferences with students and interrupts concentration.

The classrooms, laboratories, and equipment are barely adequate for current workloads. These should be improved and expanded to support future anticipated student enrollment and research.

An effort is made to make class schedules reasonably compact, and faculty do regularly have schedules which permit a day with no classes.

5.7 Projections

The Department's need for future new faculty by 1990 is 20 full-time and 5 visiting or part-time faculty. The program will be based on Civil Engineering, Geology, and Chemical Engineering areas, and a close coordination with other Departments. The soils area will expand beyond the traditional foundations engineering need into underground resources systems. The qualifications of the faculty will be consistent with the need to support these programs.

There is and will continue to be a growing need for additional labs and special space during the next ten years. These needs includes:

a. Structural research laboratories - to include testing equipment for vibration, stress, strain, plasticity, and other design related problems. This anticipates a space requirement of approximately 1000 square feet to include 2 small (150 sq. ft.) instrument type/preparation areas.

b. Environmental Engineering Research Laboratories - the need includes 3 rooms (1000 sq. ft. each) properly equipped and two controlled environment rooms (10' x 10' each).

c. Soil Mechanics and Foundation Engineering Laboratory - the need includes an undergraduate teaching laboratory (2000 sq. ft.), a storeroom (20' x 20'), moisture room (10' x 10'), a Graduate Soils-Underground Water Resources Laboratory (2000 sq. ft.), war games room (1000 sq. ft.), three rooms (1000 sq. ft.) for research.

d. Transportation Systems-Urban Systems - the need includes an undergraduate teaching laboratory (1000 sq. ft.), and research room (500 sq. ft.), with additional rooms for dark room, equipment room, and photo interpretation room.

e. Other room requirements include: Computer-Calculators Room, Hydraulics-Water Resources Laboratory, Surveying Lab Room, Radiological Lab (3 rooms) and a student study hall (30' x 50').

During the next ten year period, the needs for office space are expected to grow to include the following. Based on a population of twenty faculty and over 300 students, the Department should have a Chairman, Executive Officers, Administrative Officer, four full-time secretarial positions, and room for four student office assistants for part-time work. A work room and conference room are needed.

		Room Size (~ ftxft)
a.	Chairman	1 - 15 x 20
b.	Program Officers	2 - 12 x 15
c.	Administrative Assistant	1 - 12 x 12
d.	Office (4 full-time secretaries and 4 student assistants)	1 - 18 x 30
e.	Work room	1 - 15 x 20
f.	Conference room	1 - 15 x 20

Care should be taken in door locations to provide maximum usable space. Each faculty office should have floor to ceiling bookshelves on one wall. Faculty and graduate assistants' offices follow:

g.	Faculty offices (excluding above) (individual rooms)	17 - 10 x 12
h.	Graduate assistants	20 - 10 x 10

All rooms possible should have outside light exposure, avoiding the dungeon-type environment.

It is assumed that standard office equipment will be available. Specialized equipment such as Xerox should be provided in a centralized College of Engineering room for office equipment support.

Office space should be reasonably well grouped near the CEES central office and in the proximity of the CEES laboratory complex. Offices should not be included in laboratories since this is disruptive. Since a relatively large buiilding will be involved, perhaps it could be designed with Departmental modules capable of expansion horizontally and/or vertically. A hexagonal dumbell type structure with the Dean's offices at the hub might be appropriate. The hub could include the engineering classrooms and commons, also.

The required research space is listed in the paragraphs below and includes:

a. 6 rooms for Environmental Engineering Research Labs
b. 3 rooms for Soil Mechanics and Foundations Engineering Labs
c. 3 rooms for Transportation Systems-Urban Systems
d. 3 rooms for other research related to Environment Analysis and Civil Engineering systems

A student study hall for CEES students is needed (30' x 50'). Other special facilities include:

Parking, storage, and other outside space should be adjacent to buildings to provide secure parking and access for the approximated ten special type vehicles.

A loading ramp or dock with access should be provided next to the soils and environmental laboratories.

Facilities should also include a 100' x 150' storage area outside the soils-environmental laboratories additional to the vehicle parking. This space should be accessible yet secure for storage and for external samples exposure, testing, or pilot plant work. The area should be fenced, hard surfaced, and drained with utilities access including power, water, air and sanitary drains.

6. LIBRARY

6.1 Collection

The major subdivisions in the Civil Engineering and Environmental Sciences Department and the relative emphasis placed on each one are as follows: The major emphasis is placed on the Environmental Engineering area. The second area of emphasis is Civil Engineering and Urban Systems.

No additional subdiciplines are expected to be added during the next five to ten year period. However, expansion is expected. The discipline in which Ph.D. graduate work is now offered is in Environmental Engineering. A Civil Engineering Ph.D. is expected in the Fall of 1984.

6.2 Coordination

The Department does not have a library coordinator; instead, it is expected that each individual faculty member will be responsible for suggesting new acquisitions and reviewing new acquisitions in his area of specialty in the Library.

The system in use by the Department now is that each faculty member will work closely with the Library in developing strengths in his area of specialty; this should be reflected in the library. This system is expected to work better than an alternative system which would involve a representative in charge of acquisitions. It is impossible for one man to adequately determine the needs for a full department; instead, each faculty member shares the responsibility of developing good and sound reference material in his area.

6.3 Services and Facilities

The services offered by the library are adequate considering the financial restrictions that the library is under. In terms of additional services, the main need of the library at this point is to enlarge their collections of both journals and reference material.

The main library can better serve the main campus and resident centers through providing more material in the areas of interest.

The library facilities are inadequate since appropriations limit expansion of resource materials.

7. STUDENT PERSONNEL

7.1 Student Mix

Student enrollment data are shown in Table 7.1. This data is for the Fall of 1983.

7.2 Advising

Academic advising is carried out individually by faculty members within the Civil Engineering and Environmental Sciences Department. The assignments are made on a pro-rata basis among faculty members. Advisement is scheduled and accomplished on an individual basis with consideration of the students' goals, needs, and indicated abilities.

Placement tests in mathematics are used in advising incoming freshmen at this time. Math tests usually help in placing students in the proper courses.

All students in CEES take advantage of advising (100%). This is required prior to admission to registration.

7.3 Organizations

The student organizations encouraged by the CEES Department include the American Society of Civil Engineers and the Florida Engineering Society, both of which are technical and co-curricular in nature. We will apply for Chi Epsilon in the future.

These organizations serve the students and faculty in many ways:

a. Acquaint them with activities, goals and objectives of professional and national organizations.

b. Provide opportunities for further knowledge and individual contact with professional people.

c. Give opportunity for fellowship and leadership development.

The organizations are funded by the students and some are sponsored by the parent or local professional chapter. The student government could support some of the activities. Membership is restricted to Engineering students.

7.4 Discipline and Records

Cheating is not now a problem in CEES. It was about 5 years ago. Supervision is provided in classrooms as a normal practice by the instructor. Crowding is avoided. When cheating is observed and can be

TABLE 7.1

CIVIL ENGINEERING AND ENVIRONMENTAL SCIENCES
STUDENT ENROLLMENT SURVEY
Fall 1983

	Non-Resident Alien		Black (not of Hispanic Origin)		American Indian or Alaskan Native		Asian or Pacific Islander		Hispanic		White (not of Hispanic Origin)		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Civil Engineering	32	6	3	1	1	0	4	1	5	2	108	14	153	24
Environmental Engineering	6	1	2	0	0	0	1	0	0	0	51	17	60	18

NOTE: No minors are offered by the Department.

proven, it is reported through the appropriate channels to the Dean of Men. The College has a procedure for handling such matters.

Student records are maintained by the CEES Department secretary. A complete folder is kept current at all times for advisement and counseling and to show status and performance.

7.5 Financial Aid and Alumni

The work-study program works well for the CEES Department. The participating students provide needed assistance in typing, filing, xeroxing, and miscellaneous clerical tasks.

The CEES Department undergraduate assistants and graduate assistants affect the Department directly through their various duties which include research, preparation for lab experiments and demonstrations, grading papers, and performing special projects.

The CEES Department works with alumni by maintaining contact and keeping informed on their activities. Occasionally, surveys are made to obtain statistical data. Recently, alumni are taking an active role in securing a "chair" for the Department.

8. FACILITIES

8.1 Facililties

Classrooms are generally adequate except that a few should have demonstration benches with utilities for device and system demonstrations. The location of classrooms for the current period is adequate, but the number of suitable classrooms is inadequate. Rooms designed as labs are frequently used to fill needs for classroom space unrelated to the type of lab.

Lab space is essential for the Civil Engineering and Environmental Sciences Department at the present time. The number and size of labs is inadequate. As a result, there is crowding and inadequate space for equipment and students to perform work and achieve optimum results. There is a chemistry lab, soils lab and transportation systems lab.

There is and will continue to be a growing need for additional labs and special space during the next ten years. This need was detailed in Section 5.7.

The currently available office space for the present faculty is inadequate. Approximately one-half of the CEES faculty have single offices; these are too small and improperly equipped. The new building will help eliminate some of these problems, however, it too may be out of date in the near future.

During the next ten year period, the needs for office space are expected to grow to include the following. Based on a population of twenty faculty and over three-hundred students, the Department should have a chairman, executive officers, administrative officer, four full-time secretarial positions, and room for four student office assistants for part-time work. A work room and conference room are needed.

a.	Chairman	1 - 15 x 20
b.	Executive Officers	2 - 12 x 15
c.	Administrative Assistant	1 - 12 x 12
d.	Office (4 full-time secretaries and student assistants)	1 - 18 x 30
e.	Work room	1 - 15 x 20
f.	Conference room	1 - 15 x 20

Care should be taken in door locations to provide maximum usable space. Each faculty office should have floor to ceiling bookshelves on one wall. Faculty and graduate assistants' offices follow:

g.	Faculty offices (excluding above) (individual rooms)	18 - 12 x 15
h.	Graduate assistants	20 - 10 x 10

All rooms possible should have outside light exposure, avoiding the dungeon-type environment.

It is assumed that standard office equipment will be available. Specialized equipment such as Xerox should be provided in a centralized College of Engineering room for office equipment support.

Office space should be reasonably well grouped near the CEES central office and in the proximity of the CEES laboratory complex. Offices should not be included in laboratories since this is disruptive. Since a relatively large building will be involved, perhaps it could be designed with department modules capable of expansion horizontally and/or vertically. A hexagonal dumbell type structure with the Dean's offices at the hub might be appropriate. The hub could include the engineering classrooms and commons, also.

The required research space is listed in the paragraphs above and includes:

a. 6 rooms for Environmental Engineering Research labs
b. 3 rooms for Soil Mechanics and Foundations Engineering labs
c. 3 rooms for Transportation Systems-Urban Systems
d. 3 rooms for other research related to Environment Analysis and Civil Engineering systems

A student study hall for CEES students is needed (30' x 50'). Other special facilities include:

Parking, storage and other outside space should be adjacent to buildings to provide secure parking and access for the approximated ten special type vehicles.

A loading ramp or dock with access should be provided next to the soils and environmental laboratories.

A 100' x 150' storage area outside the soils-environmental laboratories additional to the vehicle parking. This space should be accessible yet secure for storage and for external samples exposure, testing, or pilot plant work. The area should be fenced, hard surfaced, drained and should have utilities access including power, water, air and sanitary drains.

8.2 Provisions

The CEES Department has and will continue to participate in planning requirements for future College of Engineering facilities as appropriate. There are no known state regulations precluding the needed physical plant development.

Adequate safety precautions are taken for the few hazardous areas such as in chemistry laboratories. Students must read and sign a safety sheet before entering each hazardous type lab.

Parking and loading requirements are outlined in the previous section for special requirements other than faculty.

9. SPECIAL ACTIVITIES

9.1 Types of Special Activities

The Department faculty routinely holds short courses in the areas of interest. In the last 5 years, the faculty held 26 short courses.

9.2 Organization and Funding

These short courses are organized through the College of Extended Studies and are funded by the participants.

9.3 Academics

The faculty at UCF, plus invited individuals, participate.

10. GRADUATE PROGRAM

10.1 History and Need

The Department offers graduate work to (1) enhance the undergraduate program, (2) assist in the professional development of the faculty, (3) satisfy the needs of the area of well professionally developed graduates, and (4) add to the present knowledge through continuous research.

A graduate proposal was initiated by the College of Engineering based on an indicated need. The graduate program has been developed to include a Master of Science in Engineering and Master of Sciences in (1) Environmental Systems, (2) Structures and Foundations, (3) Transportation, and (4) Construction. A Ph.D. program is functioning in the Environmental Engineering area.

There has been a considerable demand for the programs expected. There also is a demand for the graduates from the graduate program demonstrated by the rapid employment of the Regional Environmental Training and Research Organization graduates.

There is feedback from the graduates and their employers, and they seem satisfied. This is demonstrated through letters, personal contacts and questionnaires.

10.2 Faculty

Qualified faculty are selected to teach in the graduate program according to the course needs. Faculty are selected based on their academic background and research. These efforts include funded and non-funded research and also submittal of research proposals to funding agencies.

10.3 Students

A graduate student is a student who is enrolled in graduate courses and has been admitted to a graduate program. The number of graduate students in the Department is 63.

The faculty are permitted to accept students they wish to direct. A fair distribution of the load among the faculty members is guided by the Chairman of the Department. Committees are selected with the approval of the committee chairman. The committee members for a student are selected after careful consideration of the work load of all faculty members and the student's major interest.

Graduate assistants will be utilized within the program to:

a. help in setting up laboratory experiments
b. perform research activities
c. grade papers
d. do limited educational activities such as problem solving sessions, and teaching certain courses, etc.

There is not adequate space available in the laboratories for student experimentation and projects.

The student's course of study is determined according to a specified program. A committee is set up for the student, and the courses are suggested by his advisor and approved by the Department Chairman, Dean of the College and Dean of Graduate Studies.

10.4 Instructional Program

In the graduate program, emphasis is placed on a well balanced program with a sound environmental base producing solidly educated professionals. The program's strong points include:

a. well founded program
b. sound undergraduate base
c. balanced program between major and electives

The program's weak points mainly include problems with scheduling, which presents difficulties for off-campus people to participate.

Summer semesters are utilized for writing student theses, research reports or offering a few courses necessary for graduation of students.

10.5 Library

Technical periodicals, books, and government publications are, for the most part, available in the library for use by graduate students. The library cooperates fully by obtaining books and periodicals, etc., within their budget limitations upon request by the faculty members.

Requests for needed material not available from the collections are ordered on Library Loan, xerox copies, etc.

10.6 Financial Resources

The graduate program is funded by the state. Research grant money can provide graduate assistantships and topics for research for the graduate students.

The presence of grant money does not influence the selection of graduate students and the direction of their research. However, it provides a stipend to those interested in the project. Grant money would encourage students to continue their graduate studies.

There are 45 out of 63 graduate students receiving financial support from the University and outside funding agencies. The percentage of full-time students is 33.3 percent.

The number of graduate students in the CEES Department is expected to double within the next five years. As the graduate program expands and the number of students increases, there will be a great need for additional space and research equipment.

11. RESEARCH

11.1 Administration

The Department does encourage research. This academic year approximately five and one-half positions were funded on research.

Research accomplishments are considered as one of the criteria in making decisions regarding raises, promotions and tenure. "Released Time" for research is available through research grants and not through state funds. Current morale is high because of research.

The Chairman shows an active professional interest and involvement. He is internationally known in the field and encourages professional development and research. The Chairman actively assists in efforts to obtain necessary facilities and equipment within the budget limitations.

11.2 Funding

Funding which is supporting research was shown in Table 4.1. The department is proud of this funding level.

Research is being done on specific topics of interest to participating faculty members and financed by supporting agencies. However, there is non-sponsored research being done by the faculty. Thirty-seven percent of the faculty time is spent on research (in AY 83-84).

In AY 82-83, there were 26 proposals for outside support which were submitted by the CEES faculty. The support received by the CEES Department from the Division of Sponsored Research in seeking and obtaining outside funding is adequate.

11.3 Space

Laboratories are used jointly for research and teaching. The present physical facilities in the Department are not adequate for research. A separate research space should be available to each faculty member. Available research facilities will not be adequate in five or ten years. During the next five to ten years, we expect an expansion in the graduate program which will require more research space and supplies. Also, each faculty member should have 1000 square feet of space for his use in research activities. Separation between research and teaching space, equipment and supplies should be made.

11.4 Future Development

The current status of research activities is in balance. The goal of the CEES Department in regard to research activities is to allow 33 percent of each Ph.D. faculty time for research. The policies that assist in achieving this goal deals with release time for research related activities and reduction of teaching loads.

Research is essential to maintain a viable faculty. It gives the faculty members a chance to continuously review the literature, stay up-to-date on the subject and transfer their experience to the classroom. Research should enhance teaching activities, boost faculty morale and give the faculty prestige among the scientific communities. Faculty research activities will result in national recognition of UCF.

12. TERMS

12.1 Courses

Courses are selected for summer programs according to the needs. These courses are recommended by the Chairman and approved by the Dean.

12.2 Faculty

Faculty who teach in summer programs are selected by the Dean of the College of Engineering according to a list of priorities.

12.3 Funding

The summer programs are essentially funded by the state for around the 100 percent level since the University is in the first stages of development.

12.4 Schedule

The schedule of courses takes into account productivity and faculty needs. Courses at the undergraduate level are given priority over those at the graduate level.

13. COMPUTERS

13.1 Impact and Needs

The Department currently uses the computer facilities in both instruction and research. The instructional uses are primarily working with canned software. There is also a moderate amount of development of individual programs for instructional purposes. To the degree the research follows a very similar pattern. The use is most heavy at the graduate levels and then fairly heavy at the upper division levels with very little, if any, use at the lower division levels.

The Department needs equipment and capabilities which are not readily available. One need is that of a digital incremental computer (computer aided drafting) or similar other devices. A second problem has been to provide adequate assistance to students working with programs. These students generally need assistance in the areas of job control language and/or operating systems concepts. This assistance has not been readily available for the undergraduate and graduate students. This is due to limititations on the budget of the computer support department and not unwillingness on their part to provide it. These problems have been apparent at the upper division and graduate levels.

The funding is adequate for unsponsored research within broad limits. Sponsored research must be funded by grants, so there is no problem here.

The Departmental use of computer facilities in instruction at the lower division, upper division and graduate levels, as well as in research, is gradually increasing. It would be expected that at the lower level there would be a moderate increase in usage from little now to perhaps some small use of certain canned programs as instructional assistance. At the graduate level and upper division, it would be expected that within two years the uses are expected to double, within five years again to double, and then within ten years very likely to double again. This will be primarily for instructional purposes. Equivalently, unsponsored research can be expected to double at intervals of two to three years, also, providing funds are available. For sponsored research, this is extremely difficult to forecast since this will be effected by the interest of the Department and the needs of the nation during the next two to ten years. However, it would be fair to expect at least a doubling of this on a five year basis.

The Department can survive for the next ten years under the existing circumstances provided that the equipment is updated and kept current with changes in the state-of-the-art. The greatest need for changes in equipment will be apparent when the next generation of computers comes out.

14. RESIDENT CENTERS

14.1 Courses

Extensive use is made of the facilities at various resident centers such as those at Brevard, Daytona Beach, South Orlando and others through the FEEDS Program for graduate Civil Engineering and Environmental Sciences Department courses. This involves travel to and from these locations and TV presentations. The courses at all the centers are beneficial and helpful.

Only graduate CEES programs are offered at this time through the resident centers. We generally offer 5 per year.

14.2 Faculty

There are no guarantees for faculty members on proprietary rights; however, tapes are erased and reused. The effect on contact hour loading is that productivity is increased.

Students at resident centers are given the same assignments and evaluations as students on the UCF campus. The students can then call the instructors or if the course is delivered "live" at the center, the students have access to the faculty.

15. MEDIA

The Department faculty use video tapes and slides as their primary means for communicating. There does not appear to be a problem of proprietary rights, but that is because we now erase all video tapes after their intended use.