

1984

## University of Central Florida 1985 Self Study Southern Association of Colleges and Schools: College of Engineering Self Study Report

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UNIVERSITY OF CENTRAL FLORIDA

**1985**  
**Self Study**

**SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS**

COLLEGE OF ENGINEERING

SELF STUDY REPORT

Shane  
B-158

UNIVERSITY OF CENTRAL FLORIDA

COLLEGE OF ENGINEERING

SELF-STUDY

for

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS

Spring 1984

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# 1. Philosophy

## 1.1 Role in the University and the Community

### The Mission of UCF

UCF is a comprehensive state university dedicated to meeting the educational and intellectual needs of its students and society through teaching, research, and public service. Although UCF's primary emphasis is on meeting the needs of Central Florida, it meets state, national, and international needs in areas which are consistent with the mission of the University.

UCF's programs encompass both the undergraduate and graduate levels and will continue to include the offering of a full four years of undergraduate instruction on the main campus. Recognizing the vital importance of undergraduate education in the development of students, the University remains committed to excellence in its undergraduate instruction and the provision of strong and diversified programs at the baccalaureate level. At the graduate level, the primary emphasis will be on providing a wide range of master's degree programs. However, the University will also offer selected doctoral programs in areas of special UCF competence and demonstrated societal need. Special attention will be directed to the needs of place-bound and part-time students.

Research will complement and support UCF's obligation to achieve the best possible academic development of students and faculty. Research will be encouraged in both basic and project-oriented areas, with an emphasis in the latter case on state and national problems for which UCF's expertise or location provides obvious advantages.

The University recognizes the value of public service and will strive to develop strong programs to meet the needs of its

constituencies. Public service will continue to involve UCF at local, state, national, and international levels. Much of this activity will be an outgrowth of the University's research function.

### The Mission of the College of Engineering

The mission of the COE is fully supportive of and consonant with that of UCF:

"The mission of the College of Engineering is to provide a superior professional engineering and technological educational experience, to develop academic leadership and to establish a nationally recognized center of excellence in engineering and engineering technology at the University of Central Florida, while encouraging access to professional engineering and technological careers for women, minorities, placebound students and others in East Central Florida."

Programs have been carefully monitored over the years and are in the mainstream of current needs. The growth in breadth and depth of research activities associated with these programs is essential for development of the interactive support role envisioned for the College of Engineering in the emerging high technology community. It is anticipated that "service to industry" through the existing Instructional Television (ITV) network and area campuses will continue. This system provides master's level course work in selected engineering disciplines to placebound students. A cooperative effort with the University of Florida, University of South Florida and Florida Atlantic University is underway that will access a number of industries outside of Central Florida (essentially ranging statewide).

### 1.2 Evaluation and Projections

#### Societal Changes that have or will affect the College Mission.

There have been a number of significant events or trends that have become obvious that will have an impact on our activities for the next decade if not well into the next century:

- a. The Aerospace Defense hiatus of 1971-72 which is leaving profound federal budget implications and which triggered an enrollment decline in engineering with the rapid development of an engineering manpower shortage. Most authorities agree that this shortage will persist well beyond 1990. The more recent emphasis in the United States on improved productivity, real economic growth, and an improved "world-class" competitive posture for American industry has had exactly the opposite effect. Engineering enrollments are burgeoning while the demand for high quality engineering talent escalates.
- b. The "Oil Embargo" of 1973 which has drastically altered the economy of the entire planet and made energy related matters of nearly paramount importance in most decision making processes instead of the least important. Energy and related environmental concerns have become primary engineering design constraints.
- c. Shifts in research spending within the federal bureaucracy and from federal to non-federal sources are altering and will continue to alter the way major universities do business. Increasingly major joint efforts of industries, government, and universities are being called for to assure the flow of the results of fundamental engineering research.
- d. The symbiotic industrial/economic developments in Central Florida (@ \$16 billion in new plant and facilities in the next five years) continue to place undue stress on the environment, civil works, transportation facilities, etc. Solution of related problems will by their very nature make elements of government and utility companies themselves "growth industries."
- e. The flight from the northern industrial states to the "sunbelt" is becoming increasingly evident. Florida is a key factor in this activity. Further, Orlando is the place of destination within Florida. Nearly two-thirds of all new industry moving to Florida is locating in Central Florida. Each of the last three years has seen Florida rated as the number one state where manufacturers would most like to do business. This study by Alexander Grant & Co. evaluated 22 factors in five broad categories: state and local government fiscal policies, state-regulated employment costs, labor costs, availability and productivity of labor force, and other manufacturing related issues such as energy costs, markets and environmental control.
- f. The development of the Central Florida Research Park on and adjacent to the UCF campus will continue to enhance potential for research and related service to the growing concentration of high technology industry in Central Florida. Currently, nearly 40 percent of all engineers resident in Florida live and work in Central Florida.

#### Changes and Growth

In a general sense the interrelationship between societal needs and department, college and university missions and goals has proven to be



much as it was perceived to be a decade ago. However, the broad scale and size of the impact is much greater than anyone envisioned. The goals of the engineering units are consistent with the needs of Central Florida and reflect the emerging national visibility of UCF Engineering programs.

It is clear that the evolving high technology community in which we live and work already expects more of us than we can presently deliver. We must build a stronger doctoral level research base to adequately serve that community and the Central Florida Research Park.

While Florida ranks fourth in overall R & D performance due primarily to aerospace/defense expenditures (NASA, ONR, NTEC, and defense agencies) it does not rank in the top ten in either "University" or "Other Non Profit" R & D performance. (See Exhibit L). The State and the SUS must make significant strides in these two areas.

Information will be outlined in each section of this document relating to the enhancement of the college's ability to meet the demands placed on it. There is and will continue to be a very positive response to the challenges of the rapid diversification of the industrial and economic base of Central Florida, which in large measure requires the delivery of high quality engineering education (e.g. teaching, research and service).

## 2. Organization

### 2.1 Duties and Staffing

The organizational structure of the College of Engineering reflects the general unified core philosophy of existing programs. A centralized/decentralized organization has evolved. The Dean's Office faculty and staff function so as to provide those "goods and services" best dealt with centrally, while Department faculties and staff function

in a decentralized mode appropriate to dealing with the details of each academic discipline. Exhibits A through J outline the present organizations and the division of labor among the units.

The present organizational structure functions in a very adequate manner and should continue to function adequately in the future. Future changes in the organizational structure are anticipated to accommodate program growth. Current problems are largely related to inadequate allocations (from the State level) of faculty, secretarial and technical staff positions. Organizational growth is illustrated in Exhibit C.

Staffing patterns over the past decade are illustrated in the following tabulations:

TABLE 2.1.1  
FACULTY

<u>UNIT</u>	<u>1974 SACS Visit</u>	<u>1981 ABET Visit</u>	<u>1984 ABET Report</u>
Dean's Office	2	4	4.97
CEES	8 (1)	14	16
Comp. Engr.	--	--	10 (3)
EECS	11 (3)	12 (3)	19 (4)
EMMS	7 (2)	--	--
IEMS	8 (3)	11 (3)	12.5
MEAS	8	13	17
ENT	--	9	14
TOTAL	44	63	93.47 (4,5)

- (1) Includes 2 ENT prior to establishment of ENT department.
- (2) Program discontinued in 1974-75 and faculty assigned to CEES and MEAS.
- (3) Includes EMCS related faculty (expected to form into separate Computer Engineering Department in Fall 1984).
- (4) Does not include Visiting Faculty (2) proposed for EECS.
- (5) Does not include SOCA Director (EECS), FSEC Director and Associate (CEES and MEAS) and FSRI Director (CEES).

TABLE 2.1.2  
STAFF

<u>UNIT</u>	<u>1974 SACS Visit</u>	<u>1981 ABET Visit</u>	<u>1984 ABET Report</u>
<u>Secretarial</u>			
Dean's Office	2.0	2.0	4.0
DO-Sponsored Rsch.	1.0	2.0	2.0
CEES	1.0	1.0	1.5
EECS	1.0	2.0	3.0
EMMS	1.0	---	---
IEMS	1.0	1.0	1.5
MEAS	1.0	1.0	2.0
ENT	---	1.0	1.5
ITV-FEEDS	---	---	1.0
Institutes	---	.5	1.0
<u>Technicians</u>			
R&D	3.0	8.0	8.0
ITV-FEEDS	<u>1.0</u>	<u>1.0</u>	<u>2.0</u>
TOTAL	12.0	19.5	27.5

In addition, allocation of funds (hourly) to support various categories of student assistants has had a salutary effect. For example, payroll data for the most recent pay period (Feb. 1984) indicate the impact of hourly employees in the staff support area.

TABLE 2.1.3  
FTE Student Support Staff (Spring 1984)

	<u>Secretarial</u>	<u>Technicians</u>
Dean's Office	.36	1.63
CEES	1.96	1.05
EECS	1.10	--
IEMS	1.88	.50
MEAS	.46	--
ENT	.60	--
R&D Shop	.59	1.48
ITV	<u>--</u>	<u>1.20</u>
TOTAL	6.95	5.86

Enrollment growth patterns over the last five years (See Section 3.2) have averaged about 15% per year. This rate of growth cannot be

accommodated beyond the advent of CEBA I (Spring 1985) without significant improvements in allocations of faculty and support staff. Planning studies conducted in 1980-81 for CEBA I provided for a modest 5-6% growth rate over the ensuing decade. At the time of occupancy of CEBA I in 1985, the College of Engineering will be at population levels (i.e. enrollment, faculty, staff, and student associates) sufficient to saturate available space in the new faculty.

A rapidly growing graduate study and research program will place added pressures on the College to accommodate the demand for services. While local allocations of faculty and staff have been consistent and reasonable within the given resource constraints, statewide/system allocations have not recognized the extremely dynamic growth taking place at UCF specifically and in the region generally.

## 2.2 Support and Communications

The College structure facilities services to the operating departments. Centralized service for admissions, class scheduling, ITV Studio operator, R&D Shop support, student petitions, graduation audit, research administration, and the like accomplish a number of important functions at least effort and cost.

Communication between and among the several units in the College appears to be free, open and naturally supportative. An irregularly published (26 times in 1983) in-house flyer called "FYI" serves as informal device to recognize achievements and share information. University publications meets College needs very well.

The principal need in this area is for a College oriented Newsletter, Research Report, etc., published on a quarterly basis to reach to various professional publics of the College of Engineering.

Local news media seem intent on keeping UCF-Engineering a well kept secret.

A number of College level standing Committees generally operate effectively in dealing with educational policy matters and in rendering advice to appropriate administrators. Currently the following committees are functioning:

Department Chairman's Council

Academic Standards Committee

Computer Usage Committee

College Personnel Committee

Faculty Senate Delegation

Student Advisory Council

Public Relations Committee

Library Committee

Facilities Committee

In addition there are advisory boards/committees for the several institutes and centers. College faculty also served on no less than 16 University-wide councils/committees in addition to the present SACS Self-Study activity.

### 2.3 Projections

College of Engineering planning procedures include involvement of the Department Chairmans Council, Department Faculty and the Dean's Office staff. Special problems are typically studied by the Ad Hoc Committees (e.g. current year activity includes review of Computer engineering and Chemical Engineering) before more formal steps are implemented.

Normally, annual planning retreats are convened at both the College and University level. These provide excellent opportunities to share information, approve common goals and objectives, and adopt priorities.

Engineering is also subject to specialized professional accreditation (i.e. the Accreditation Board for Engineering and Technology) actions. This activity provides for periodic review and reporting, self appraisal, and site visits by peers in the disciplines affected. Both Engineering and Engineering Technology programs have been visited by ABET on two occasions since the last SACS review.

Additionally, the State University System conducts (typically at six year intervals) "program reviews" using a team of external consultants. Engineering and Engineering Technology will have a full-scale program review in 1986-87.

The College of Engineering has maintained a Board of Visitors continuously since 1969. This Board, typically meeting once each year, has made significant contributions in helping the College develop programs that are in the mainstream of regional, state and national needs; in advising UCF administration of the needs and opportunities before the profession; and generally promoting the welfare of the College of Engineering. (A list of the current Board of Visitors is included as Exhibit K).

The following organizational changes are under review or expected:

- (a) Establishment of a separate department of Computer Engineering (program is currently managed by the IEMS Department).
- (b) Creation of a program and department of Chemical Engineering
- (c) Creation of a program in Aeronautical Engineering to be managed by the MEAS Department
- (d) Finalization of the Computer Technology program in Engineering Technology

- (e) Discontinuance of the Environmental Control Technology program in Engineering Technology
- (f) Review of the Associate Dean function and consideration of adding full time professionals in Research Administration and Facilities/Laboratory Management.

### 3. Educational Program

#### 3.1 Correlation of Program and Objectives

The College of Engineering offers two (2) undergraduate degree programs, the Bachelor of Science in Engineering (B.S.E.) and the Bachelor of Engineering Technology (B.E.T.). Within the engineering program there are six options, all accredited by the Engineering Accreditation Council (EAC) of the Accreditation Board for Engineering and Technology (ABET). The six Engineering options are:

- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Environmental Engineering
- Industrial Engineering
- Mechanical Engineering

The Engineering program is based on a strong integrated core which is required of all engineering students. The program requires a minimum of 132 semester hours, distributed as follows:

General Education	49*
Engineering Core	54
Engineering Option	29

\*25 semester hours in general education, such as mathematics, science, and economics, are also part of the engineering requirements.

The Technology program options are :

Computer Technology

Electronics Technology

Design Technology

Operations Technology

Environmental Control Technology (to be dropped after 1984-85)

Computer Technology was first offered in 1983-84, and the remaining three (Electronics, Design, and Operations) are all accredited by the Technology Accreditation Council (TAC) of the Accreditation Board for Engineering and Technology (ABET).

The Engineering Technology program is based on a strong integrated core which is required of all technology students. The program requires a minimum of 128 semester hours, distributed as follows:

General Education	49*
Technology Core	59 (includes 42 at Community College)
Technology Option	20

\*19 Semester hours in general education, such as mathematics, sciences and economics, are also a part of the engineering technology requirements.

The College does not have a limited access program, but does have grade point minimums for graduates. These are

2.250 in the engineering core courses

2.250 in the option

2.000 in all other courses presented for the degree

Since the engineering program is a professionally-oriented program with emphasis on a broad undergraduate preparation, with technical specialization at the Masters level, the College requires all B.S.E. students to take the Engineering Intern (EI) examination administered by



the Florida Board of Professional Regulation twice a year. The College has an approximate pass rate of 70% which is quite good considering that the student is required to take the exam as a first step in the registration process, but is not required to pass it. Many students will then re-take the exam and pass the second time.

Students from the undergraduate Engineering program have been successful in a variety of career opportunities and employee/employer feedback for ABET accreditation visits has been favorable.

There is no such thing as an academic minor in engineering and the College does not offer one nor plan to. There is some slight move nationally in this direction, but there are many problems with ABET accreditation, professional registration, and other factors such that it does not appear appropriate to consider the matter further at this time.

The College once participated in a broad interdisciplinary program which required all university students to take a course in engineering (as well as in business and education). This program was effectively killed in the late 1970s by external forces. Although the College offers two or three such courses each term, the enrollments are miniscule and the program exists in name and spirit only. Many engineering faculty are quite interested in the program (especially in light of the national interest in such programs such as at Stanford, Syracuse, SUNY-Stony Brook, etc.) but the negative bias toward allowing Engineering to participate in general education is so strong that it appears unlikely there will be any resurgence in the program over the next five years.

The engineering coursework offered at the off-campus centers is primarily limited to graduate courses, although the computer technology program is becoming a full-time program at the Brevard Campus and some

engineering core courses are also being offered at that Campus in 1984-85. There is interest in such coursework, but the enrollments are quite small compared to similar offerings on the main campus.

The College will be moving into a new building in the Summer of 1985, and it will take a short time to get adjusted to new labs, room scheduling, etc. Thus no major curricula over-hauls are anticipated, but there are several issues which will be addressed in the next few years. Serious consideration is being given to adding an option in Chemical Engineering. Other options such as Materials Engineering, Electro-Optical Engineering, Manufacturing Engineering and Aeronautical Engineering have also been mentioned and will be investigated.

Another serious undergraduate issue which must be addressed soon, and should be in time for the 1985-86 catalog, is the issue of English proficiency. English is the second language of the world, and it is the primary international language in business and engineering. There have been concerns (over the past 50 years) that engineering students need to be better writers and speakers. The current increasing secondary level and general education English requirements may help, but it appears that some more uniform and perhaps more stringent testing mechanism should be employed and the College is seriously pursuing this issue further.

The engineering technology program is an upper division program which is designed to admit graduates of Florida Community Colleges (and many from out-of-state). Completion of an additional 64 semester hours of engineering technology core courses and option courses leads to the B.E.T. degree. Significant enrollments are apparent in computer technology and electronics technology. The option in environmental control technology is being phased out due to low enrollment. The

remaining options (design technology and operations technology) will require careful study along with proposals for new options. There has been discussion of a construction type of option, however, it appears more plausible to combine the design and operations options into one (in operations) and essentially include construction operations within that option. An alternate approach worthy of further study is the formation of separate construction and manufacturing technology options. Since technology graduates enrolled after 1979 are not allowed to take the Engineering Intern examination in the state of Florida, the design option (which implies the need for registration) no longer appears appropriate.

Currently the engineering technology curricula are expected to show considerable growth in the Brevard Life Long Learning Center. During the past decade approximately one third of B.E.T. graduates completed their Associate Degrees in Brevard County. Orange and Seminole counties are the next largest producer of B.E.T. students. Volusia county with the advent of the proposed joint use facility at Daytona Beach Community College could become a third major engineering technology center.

Both engineering and technology programs have been quite restricted by the lack of laboratory space and equipment. Much laboratory equipment has been purchased over the past 3 years and the new engineering building will help to alleviate laboratory space problems.

Special programs are quite limited. Summer programs for minority and gifted students have been offered the past three years and are planned to continue. The impact of these programs will not be apparent for several years. Study Abroad programs which require proficiency in French have limited appeal, although one student has participated.

Each engineering student is given an Advisement Manual at orientation sessions and strong emphasis is placed upon the student's being responsible for understanding and following degree requirements. The Faculty Advisors are quite burdened and since both the engineering and technology programs are quite structured and straight forward, it appears appropriate to put more responsibility on the student for petitions, etc. The increased space and facilities for Undergraduate programs in the new building should also help in this regard. Major problems we find in students having trouble meeting degree requirements include:

- (1) grade point problems
- (2) late petitioning
- (3) inappropriate petitioning - not following guidelines
- (4) not reading the requirements in the advisement manual and relying on word-of-mouth information.

The frequency of problems 2 through 4 are slowly being reduced.

The College of Engineering has participated in a number of programs over the last several years aimed at increasing the number of minority and women students enrolling in Engineering and Engineering Technology.

For example:

- (1) Southeastern Consortium for Minorities in Engineering (SECME) sponsored by 17 Engineering Colleges and a large group of industries. This is a precollege program aimed at improving the flow of minorities into science and engineering programs.
- (2) Operation CARE (Career Awareness and Readiness for Engineering). This is a pre-college summer program sponsored by UCF and the Westinghouse Educational Foundation aimed at encouraging outstanding minority student interest in engineering careers.
- (3) National Action Council for Minorities in Engineering (NACME) sponsored by a number of large industries. This is an undergraduate scholarship program for minorities. UCF had 30 NACME Scholars during 1983-84.

ROBERT D. KERSTEN

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Program for Women. This is a local UCF program designed to inform women of engineering opportunities and ease entry into engineering careers.

of these programs has been significant.

Number	Fall 1974		Fall 1983	
	Number	% of Total	Number	% of Total
33		3.7	282	10.6
27		3.1	396	14.9

minimal changes in the philosophy or curriculum over the 10 years. There will be curricular adjustments, and perhaps an addition, but no major changes are anticipated. Staffing should be in several areas including faculty, graduate assistants, professors, and clerical staff. Much of this will be a function of the individual department growth. The table below lists the number of students graduated over the past seven years.

TABLE 3.2.1  
Graduates - Last Seven Years

(Data represents Summer/Fall/Spring for recording purposes)

77-78	78-79	79-80	80-81	81-82*	82-83	83-84
115	140	139	173	147	245	232
74	71	75	96	80	102	114
189	211	214	269	227	347	346

shift from quarter system to semester system.

Although enrollment has increased at a rate of over 15% a year, degree production increases are of the order of 10%. No slowdown in growth is anticipated, due to the dramatic growth of the Central Florida area. The increased secondary and general education testing requirements in the state might initially limit some enrollments in engineering in the future, but the general trend should be to have more and better prepared

students to at least initially consider engineering. Such students can always transfer to another program if they desire. Thus we consider growth rate projections in both enrollment and degree production of about 10-15% to be reasonable. Unfortunately this is not across all areas of the College.

TABLE 3.2.2  
College of Engineering  
Enrollment Projections

<u>Historical Year</u>	<u>Head Count Fall Term</u>	<u>% Change from Prior Year</u>
1976	1089	--
1977	1175	7.9
1978	1306	11.1
1979	1541	18.0
1980	1871	21.4
1981	2175	16.2
1982	2470	13.6
1983	2651	7.3
<u>Projected Year</u>	<u>%5 Growth Per Year (1)</u>	<u>10% Growth Per Year (2)</u>
1	2783	2916
2	2922	3207
3	3069	3528
4	3222	3881
5	3383	4269
6	3552	4696
7	3730	5166
8	2916	5682
9	4112	6250
10	4318	6876

Growth rates in engineering technology are more difficult to predict, but are expected to show a modest upward trend. Since secondary students will soon be better prepared, many more may choose to go into engineering rather than to seek the A.S. and B.E.T. degrees in technology. This would change the mix of engineers/technologists slightly. In addition, industry in Florida has been ambivalent about

defining the future need for technologists and recommendations have varied widely, including one statewide study which recommended the phasing out of baccalaureate programs in technology.

TABLE 3.2.3  
Engineering Technology  
Enrollment Projections

<u>Historical Year</u>	<u>Head Count Fall Term</u>	<u>% Change From Prior Year</u>
1976	221	---
1977	238	7.7
1978	234	(-)1.7
1979	247	5.6
1980	312	26.3
1981	373	19.6
1982	418	12.1
1983	429	2.6

<u>Projected Year</u>	<u>5% Growth Per Year</u>	<u>10% Growth Per Year</u>
1	450	472
2	472	519
3	497	571
4	521	628
5	548	691
6	575	760
7	604	836
8	634	920
9	666	1012
10	699	1113

There does appear to be a need for the technologist in the technical job spectrum to complement the engineer and scientist, but actual numbers and need are difficult to address in specific detail. It should be noted that the employment rate of new graduates is essentially 100% with starting salaries matching or exceeding most majors at UCF.

#### 4. Financial Resources

##### 4.1 Auxiliary Activities

The College of Engineering does not operate any separately budgeted (i.e. non I&R funds) enterprises. Two auxiliary activities are operated

in a centralized mode in order to optimize services rendered within limitations imposed by severe funding constraints.

#### R&D Shop

The Engineering Research and Development Shop administered by the Associate Dean, provides essential fabrication, maintenance, property control, and faculty support for the teaching and research functions of the College. The coordinate groups (see Exhibit B), each consisting of one Manager of Laboratories and three technicians, perform tasks necessary to the smooth operation of a large laboratory-based activity.

TABLE 4.1.1  
R&D Shop Activity

<u>Year</u>	<u>Number Faculty</u>	<u>Number Technicians</u>	<u>Number Jobs</u>	<u>Lab. Equip. Inventory</u>
1978-79	58	6	171	\$2,163,660
1979-80	59	6	198	2,336,727
1980-81	63	6	158	2,546,296
1981-82	64	9	204	3,105,539
1982-83	79	9	303	5,787,235
1983-84	93	10	320(1)	7,990,868

(1) Estimated

TABLE 4.1.2  
R&D Shop Support Budget

#### Direct I & R Allocations (\$1,000's)

<u>Year</u>	<u>OPS</u>	<u>EXP</u>	<u>OCO</u>
1978-79	2.0	6.5	2.0
1979-80	4.1	8.5	3.0
1980-81	3.1	3.1	.3
1981-82	5.0	12.5	18.0
1982-83	3.0	9.8	120.0
1983-84	9.0	9.0	20.0

#### ITV Studio

An Instructional Television Studio (ITV) has been operated by the College of Engineering since 1972. Staff support was supplied by one R&D



Shop Technician and student assistants until 1982-83. That year due to special legislative support for the innovative Florida Engineering Education Delivery System (FEEDS) (see Section 7.1) in order to enhance statewide availability of master's level Engineering coursework, separately identified budget resources were made available.

TABLE 4.1.3

ITV/FEEDS Studio Budget (\$1,000's)

<u>Year</u>	<u>Salary</u>	<u>OPS</u>	<u>EXP</u>	<u>OCO</u>
1978-79(2)	--	1.0	4.5	4.2
1979-80(2)	--	2.3	7.0	16.7
1980-81(2)	--	1.0	5.0	.8
1981-82(2)	--	5.0	10.5	18.0
1982-83	--	38.0(1)	12.0(1)	40.0(1)
1983-84	155.0(1,3)	40.0(1)	30.0(1)	25.6(2)

(1) From Special Legislature allocation

(2) From regular I & R allocations

(3) 3.47 faculty lines; one secretarial line; one technician line

Table 4.1.4

ITV/FEEDS Activity

<u>Year</u>	<u>Fall Term No. Courses</u>	<u>Fall Term No. Sites</u>	<u>Fall Term Head Count</u>
1978-79	12	4	119
1979-80	14	4	124
1980-81	16	4	101
1981-82*	16	9	117
1982-83	16	10	130
1983-84	17	14	157

\*Started Semester System

## 4.2 BUDGETS

The College budget is determined primarily by allocation model procedures developed by the College of Academic Affairs and received regularly by the Dean's Council. Within the University these procedures give the College its fair share of the UCF monies. However, the total University allocation definitely needs improvement to take into account the newness of the institution and the attendant rapid growth rates. SUS allocation procedures tend to be "inventory-based" and thus favor the older established and slower growing units of the system.

Development allocations are made by the Dean in consultation with Chairmen and Unit Directors. Factors considered include productivity, number of faculty and staff assigned, credit of contact hours (i.e. due consideration of laboratory instructional requirements), capital equipment inventory, maintenance and supplies requirements, and program and research priorities.

The faculty do not have direct budget allocation responsibilities. However, the collective wisdom of all concerned is evident in the establishment of curricula, laboratory requirements, computer needs, student assistant utilization, research emphasis, etc. from which budget allocations are largely determined.

In recent years so-called Quality Improvement Program funds have been made available by the legislature to assist in the enhancement of certain selected units. These units, largely determined by University priorities, receive funding in addition to regular I & R allocations in order to promote development of centers of excellence. At UCF, Engineering is included among those high priority units.

During each of the last three years, all Engineering units in the

State University System have received special enhancement funds as a result of several statewide studies during 1980-81 (e.g. Governor's Defense Industry Task Force, Florida Engineering Society Education Committee Report, and SUS/BOR Task Force on Science, Engineering and Technology Service to Industry). This activity has resulted in a significant increase in faculty resources (21 new positions) and major improvements in laboratory equipment (1982-84 @ \$4,000,000).

A summary of pertinent budgetary data is given in the following tables:

TABLE 4.2.1  
Engineering Faculty Salary Survey  
(Average Nine-Month Rate)

	<u>Professor</u>	<u>Associate Professor</u>	<u>Assistant Professor</u>	<u>Instructor</u>	<u>All Ranks</u>
1978-79	25,775	19,242	16,287	12,627	18,628
1979-80	27,262	20,870	16,647	13,263	20,197
1980-81	31,717	24,610	19,613	14,056	23,023
1981-82	35,819	27,367	22,149	14,782	24,455
1982-83	38,555	29,155	24,323	17,472	27,452
1983-84	41,135	30,326	24,538	18,575	28,743

TABLE 4.2.2

## Summary of Operating Budget Resources

	<u>Regular I &amp; R</u>	<u>QIP</u>	<u>Engineering Enhancement</u>		<u>Released Time Conversions</u>	<u>Total</u>
			<u>Other</u>	<u>ITV FEEDS</u>		
R						
S						
-79	54,343	--	--	--	35,661	90,004
-80	62,647	--	--	--	50,000	112,647
-81	96,933	40,000	--	--	98,750	235,683
-82	99,915	42,000	--	38,000	185,000	326,915
-83	78,646	40,000	--	--	38,000	396,646
-84	70,526	40,000	--	40,000	329,474	480,000
P						
-79	103,355	--	--	--	45,600	148,955
-80	133,339	--	--	--	55,000	188,339
-81	89,957	24,000	--	--	78,583	192,540
-82	180,348	25,000	--	--	96,000	302,143
-83	128,036	25,000	--	12,000	84,000	249,036
-84	142,612	25,000	--	30,000	139,388	337,000
O						
-79	82,202	--	--	--	37,687	119,889
-80	119,177	--	--	--	35,817(1)	154,994(1)
-81	50,985	70,000	--	--	20,000	140,985
-82	47,483	100,000	--	--	192,000(2)	339,483(2)
-83	63,420(3)	120,000(3)	2,000,000	40,000	135,352(3)	2,358,772(3)
-84	106,875	19,875	2,000,000	--	323,758	2,450,508

less \$183,420 in OCO and \$135,352 released time conversions due to revenue shortfall

less \$114,995 due to revenue shortfall

## 5. Faculty

### 5.1 Recruitment and Selection

Faculty positions are allotted to the College on the basis of student credit hours taught and special state allocations such as engineering enhancement programs. These positions are then allotted to the departments on the basis of enrollment, courses taught, and program requirements. The orderly recruiting, selection, processing and appointment of faculty personnel, including adherence to affirmative action guidelines is a major undertaking in the present growth mode of College and the developing material shortage of appropriately graphfield coordinates. Essentially all faculty and staff are involved in one or more phases of this process.

### 5.2 Salaries

At the time of initial appointment, faculty salaries are negotiated and are based on the competitive marketplace and the availability of funds. Yearly salary increases are based on the Annual Agreement negotiated between the Board of Regents of the State University System of Florida and the United Faculty of Florida. Details are published in the Agreement. Discretionary increases are based on evaluations by the department chairman and the Dean. College of Engineering guidelines for awarding discretionary increases include the following general provisos:

1. Sufficient funds will be assigned by rank and discipline (i.e. Engineering and Engineering Technology) so as to bring each rank in the aggregate to the same relative proportion of the national salary averages. The Oklahoma State University Salary Survey is the national data normally utilized herein.
2. A portion of the available funds will be utilized to recognize meritorious performance and isgnificant contributions to UCF/COE programs as evidences by:
  - (a) Chairman's Evaluation Summary 1982-83
  - (b) Annual Report Information Summary
  - (c) Chairman's Salary Recommendation

- (d) Chairman's relative ranking of departmental faculty (giving due consideration to relative importance of individual faculty to the departmental program, to truly distinguished performance, and to retention of quality faculty members).
3. The remaining funds will be utilized without regard to rank to recognize:
- (a) truly distinguished performance,
  - (b) sustained performance,
  - (c) evidence that scholarly reputation is more than local in character, and
  - (d) special contributions to the research and graduate study missions of the COE.

Engineering Faculty salaries at UCF have persistently remained in the seven to nine percent range below national salary averages (as determined by the Oklahoma State Salary Survey and the American Society for Engineering Education Salary Survey). This factor is very evident in the recruitment process and is leading to some salary compression problems among currently employed faculty.

### 5.3 Evaluation, Security and Promotion

Evaluation procedures and the criteria for promotion and tenure are detailed in the Board of Regents Rules and the University of Central Florida Rules. In 1974 the College of Engineering adopted additional criteria for promotion and tenure. The added requirements beyond the normal university requirements for tenure and promotion are (a) professional registration and (b) continued maintenance of competency. The Florida Legislature during its 1979 term amended the engineering registration law to require engineering faculty "teaching principles and methods of engineering design" to be registered in Florida.

### 5.4 Working Conditions

At present, the college office space is not adequate. Continued growth in terms of faculty and number of programs has finally imposed requirements on all available permanent space and forced the use of

office space in temporary buildings. This situation will be relieved in the near future with the completion of a new engineering building scheduled for Summer 1985.

### 5.5 Projections

Faculty and support staff projections are identified in Table 5.5.1 and footnotes. please refer to section 6 for information on facilities.

TABLE 5.5.1  
Faculty and Staff Projections

<u>Year</u>	<u>Faculty</u>	<u>Secretarial</u>	<u>Staff</u> <u>Technicians</u>
1983-84	93.47 (1)	10.5	9.0
Present Deficit	17.0 (2)	5.0 (3,5)	7.0 (4,5)
Projected Annual Need (5% Growth Rate - same Head Count/Faculty Ratios)	5.0	1.0	1.0
Projected Annual Need (5% Growth Rate - reduce Head Count/Faculty Ratio to 24:1)	7.5	1.5	1.5

- (1) Present Head Count/FTE Faculty @ 28.36:1
- (2) Deficit estimate based on Head Count/FTE Faculty @ 24:1 (at an FTE/Head Count factor of .75 this would yield an FTE student/faculty ratio of 16:1 which was targeted at the beginning of the Board of Regents Five Year Plan for Engineering in 1981-82)
- (3) Based on Faculty/Secretarial Staff ratio of 7:1
- (4) Based on one technician per \$500,000 laboratory equipment inventory
- (5) National average ratio of faculty to support staff is 2.5: this adjustment would yield ratio of 3.5

## 6. Physical Facilities

### 6.1 Status of Current Facilities

The College of Engineering occupied its present facilities in the Fall of 1970. As other university buildings were completed, the College was able to occupy more and more space within UCF Building No. 12 which has been designated the Engineering Building. As of the Fall of 1984, the College occupies and has scheduling responsibility for the facilities

listed in Table 6.1.1. This table can be summarized as follows:

Classrooms	9
TV Studio/Classroom	1
Teaching Laboratories (core)	4
Teaching and Research Laboratories	7
Research Laboratories	4

From a scheduling standpoint the College has many of the same problems which face the entire university. Classrooms and laboratories are scheduled fully from 8 a.m. until 8 or 9 p.m. daily (except for Friday). There are also occasional Saturday Laboratory sections as well as 7 a.m. classes. The classroom requirements are for the entire engineering core (approximately 100 core classes/sections are currently scheduled each semester) as well as the five departments, which cover the six options in engineering and the four in engineering technology. It has been necessary in 1983-84 to use all of the multi-purpose classrooms for 5 p.m. classes on Monday through Thursday, a difficult scheduling hour for a commuter campus.

Thus the current facilities are essentially at capacity, and an informal study of maximum seats available in these rooms indicates that the College will be extremely space constrained until Phase I of the Center for Engineering and Business Administration (CEBA) is completed.

The concept for a UCF Center for Engineering and Business Administration (CEBA) was proposed in the fall of 1980 by Dean Robert Kersten of the College of Engineering and Dean Clifford Eubanks for the College of Business Administration. The basis of the CEBA concept was to encourage cooperative programs in Engineering and Business Administration so that these two rapidly growing colleges could better serve the expanding business and industrial community in Central Florida.



TABLE 6.1.1

UCF COLLEGE OF ENGINEERING  
Summary of Existing Facilities

<u>Function</u>	<u>Capacity</u>	<u>Comments</u>
Multi-Purpose Teaching Classrooms (5)		
EN 108, 110	48 each	
EN 203, 407	56 each	
PC3-201, 202	72 each	
Limited Purpose Teaching Classrooms (4)		
EN 204	30	TV Studio/classroom
EN 109	30-32	Drafting Tables
EN 307	25-30	Seminar Tables
EN 202	15	TV viewing room only
Teaching Laboratories (2)		
EN 241, 244*	20-24	Electrical Laboratories
Dual-Purpose Research/Teaching Laboratories (9)		
EN 149, 159**	16-18	Environmental
EN 242	12-14	Civil Engineering
EN 230	20-22	Industrial
EN 231	20-22	Mini-Computer Systems
EN 234	16-18	Instrumentation
EN 237	3-4	Laser Optics
EN 153	14-16	Fluid Mechanics
EN 138	16-18	Materials Science, Mechanics of Materials
EN 362A	4-6	Laser Optics
EN 362B	8-10	Microcomputer Systems
EN 418	18-20	Microcomputer Systems
EN 347, 350	6-8	Microelectronics

NOTE: \*Engineering Technology programs share facilities in EN 241 and EN 242.

\*\*Some instructors and all Graduate Assistants are provided space when possible within corners of the labs such as EN 149, EN 159, EN 153, EN 138, etc.

The CEBA concept consisted of three phases. Phase I, the Engineering Building Phase, was planned to provide about 122,000 gross square feet of laboratory, office and classroom space for the College of Engineering. Phase II was planned to provide about 55,000 gross square feet of office and institute space for the College of Business Administration and about 55,000 gross square feet of joint use classroom and seminar room space for both Engineering and Business Administration. Phase III, the engineering research phase, is planned to provide about 120,000 gross square feet of research laboratory space to accommodate the rapidly expanding research program in the College of Engineering.

A contract was awarded in January, 1984 for the construction of the Engineering Building phase (Phase I) which is expected to be completed in July, 1985. Program plans for Phase II are currently being developed by the College of Business Administration and it is hoped that construction on that phase can be started in 1985. It is expected that construction on Phase III can be started in 1986 or 1987. The CEBA Phase I facility will provide classroom, laboratory and office space as shown in Table 6.2. After completion of CEBA Phase I, it is anticipated that the College of Engineering will vacate the existing engineering building except for the classrooms, offices, laboratories and shop facilities on the first floor. These facilities plus the CEBA Phase I facilities should accommodate the teaching and research activities of the College of Engineering for the next 3 to 5 years. However, additional facilities (CEBA II and CEBA III) are needed in the immediate future to accommodate further growth and development of graduate and research programs.

TABLE 6.1.2

UCF COLLEGE OF ENGINEERING  
SUMMARY OF NEW FACILITIES  
IN CEBA PHASE I

<u>Function</u>	<u>Capacity</u>	<u>Comments</u>
Multi-Purpose Teaching Classrooms (11)		
CBA 224, 227, 234, 324, 327, 427, 428, 435, 436	50	Temporary Classrooms
CBA 187	48	Permanent Classrooms
CBA 188	36	Permanent Classrooms
Limited Purpose Teaching Classrooms (5)		
CBA 286	20	Seminar
CBA 287	27	Seminar
CBA 288	34	ITV Monitor Room
CBA 386, 388	48	ITV Classrooms
Teaching Laboratories (5)		
CBA 471, 474	20-25	Electrical Engineering
CBA 168,	20-25	Fluid Mechanics
CBA 157, 158	20-25	Materials Engineering
Dual Purpose Research/Teaching Laboratories (22)		
CBA 124, 127	25-30	Computer Terminal
CBA 136	20-25	Process Engineering
CBA 163	15-20	Microelectronics
CBA 171	8-10	Two Phase Flow
CBA 172	8-10	Heat Transfer
CBA 174	15-20	Instrumentation
CBA 237	20-25	Industrial Engineering
CBA 257	20-25	Microcomputer
CBA 267	20-25	Systems and Controls
CBA 270	20-25	Computer Aided Manufacturing

Table 6.1.2 (cont.)

CBA 274	25-30	Computer Aided Design
CBA 334, 337	15-20	Civil Engineering Design
CBA 356	10-15	Photoelasticity
CBA 358	10-15	Experimental Mechanics
CBA 361	10-15	Optics and Microwaves
CBA 370	30-40	Mechanical Engineering Design
CBA 456	25-30	Digital Systems
CBA 461	20-25	Electrical Engineering Design
CBA 468	20-25	Communications

Research Laboratories (6)

CBA 176,265, 364, 367, 373, 375	NA	Sponsored Research
---------------------------------	----	--------------------

7. Special Activities

7.1 Type of Special Activities

7.1.1 Graduate Programs for Students in Industry

The College of Engineering at the University of Central Florida, University of Florida, Florida Atlantic University, and the University of South Florida are contributing members of the Florida Engineering Education Delivery System (FEEDS). FEEDS provides graduate degree programs at locations remote to the regular campuses by various delivery methods including video recorded classes and live instruction. Other methods such as ITFS microwave and satellite broadcasting of television classes are being considered.

Admission criteria, grading, and degree program requirements are identical to those on the main campus. Class attendance, examinations, homework submission, etc. are administered by personnel at the sites.

Student questions relative to class material are generally handled by phone but the students can visit the campus if necessary. Academic counseling is generally done by phone or mail but faculty sometimes visit the site for group counseling, or the student comes to the campus.

The College of Engineering has have been delivering course work by recorded TV since 1972 with excellent results. Course offerings typically involve 18-21 courses each term. In the Spring of 1984, 21 courses were delivered to 14 different locations with a total student course enrollment of 222 at the recording location and 185 at the remote sites.

#### 7.1.2 Conference and Short Courses

In cooperation with the College of Extended Studies, the College of Engineering sponsors conferences and short courses for engineering professional improvement. These activities generally are under the direct supervision of an engineering faculty member.

#### 7.2 Organization and Funding

The activities described in section 7.1 come under the responsibility of the Dean's Office of the College of Engineering. Funding for the FEEDS program is partially derived form the student credit hour productivity and partially from a special appropriation by the State. Funding for the conferences and short courses is obtained from registration fees.

#### 7.3 Academics

The academic requirements and policies for the FEEDS program are identical to those on the campus. The conferences and short courses are non-credit, but occasionally the College of Extended Studies awards Continuing Education units for participation.

## 8. Graduate Programs

### 8.1 Selection

Departments are selected to offer various graduate programs based on documented need for the program and the ability of the department to offer that program. All new graduate programs must be approved by the College, the Office of Graduate Studies, and the Board of Regents.

At present, with the exception of the Department of Engineering Technology, all departments in the College of Engineering offer options in the Master of Science in Engineering (M.S.E.), the Master of Science (M.S.), and the Doctor of Philosophy (Ph.D) degree programs. The M.S.E. program is intended for those who have attained a bachelor's degree in the engineering discipline in which they wish to continue study at the graduate level. The M.S. program is designed to provide the competent student in engineering or other selected fields an opportunity to specialize in a particular subject area within engineering. The Ph.D. program is primarily intended for those with a Master's degree in engineering; but, with appropriate articulation courses, master's degree holders in related disciplines will be able to use the program to study selected engineering disciplines in depth. Present graduate programs include the M.S.E. professional track (designed for those who have attained a bachelor's degree in engineering), the M.S. track (designed for those who may have backgrounds in closely related mathematics and science areas with specialized interests in engineering), and selected doctoral (Ph.D) programs.

#### Master of Science in Engineering Options

Civil Engineering  
Computer Engineering  
Electrical Engineering  
Environmental Engineering

Industrial Engineering  
Manufacturing Engineering  
Mechanical Engineering

Master of Science Options

Computer Integrated Manufacturing  
Computer Systems  
Construction  
Energy Systems  
Electrical Systems and Sciences  
Engineering Administration  
Engineering Systems Analysis  
Environmental Sciences  
Mechanical Systems  
Operations Research  
Simulation Systems  
Structures and Foundations  
Transportation Systems

Doctor of Philosophy in Engineering Options

Computer Engineering  
Electrical Engineering  
Environmental Engineering  
Industrial Engineering  
Mechanical Engineering

The only "new" program currently in the planning and implementation process is the Ph.D. option in Civil Engineering. Action by the Board of Regents is anticipated in the near future.

Preliminary planning suggestions for additional graduate programs include:

Within 5 years

Materials Engineering (M.S.E.)  
Electro-Optical Engineering (M.S.E. and Ph.D.)  
Chemical Engineering (M.S.E.)

Within 10 years

Chemical Engineering (Ph.D.)

The possibility of enhancing several of the M.S. options to M.S.E. options will receive further considerations.

## 9. Research

### 9.1 Present Research Activity

As indicated in Table 9.1.1 sponsored research activity in the College of Engineering has increased significantly during the past several years and research funding during the past four years has exceeded the million dollar level. Each of the academic departments in the College have contributed to this activity in a variety of ways as follows:

#### Civil Engineering

Both theoretical and applied research studies relating to the design and analysis of structures, foundations, water resources, and transportation systems have been and are currently under way at UCF. Computer aided design and analysis is most prevalent among the activities. Investigation of Florida sinkholes and groundwater seepage for shallow and deep foundations have been activated based on recent sinkhole problems in Central Florida. Numerical analysis techniques and optimization algorithms for vibrations in the solid mechanics areas continue. Stormwater management, highway drainage, and pavement design were initiated in response to national and state needs. Water resources finite element modeling continued to define hydraulic designs and water impacts.

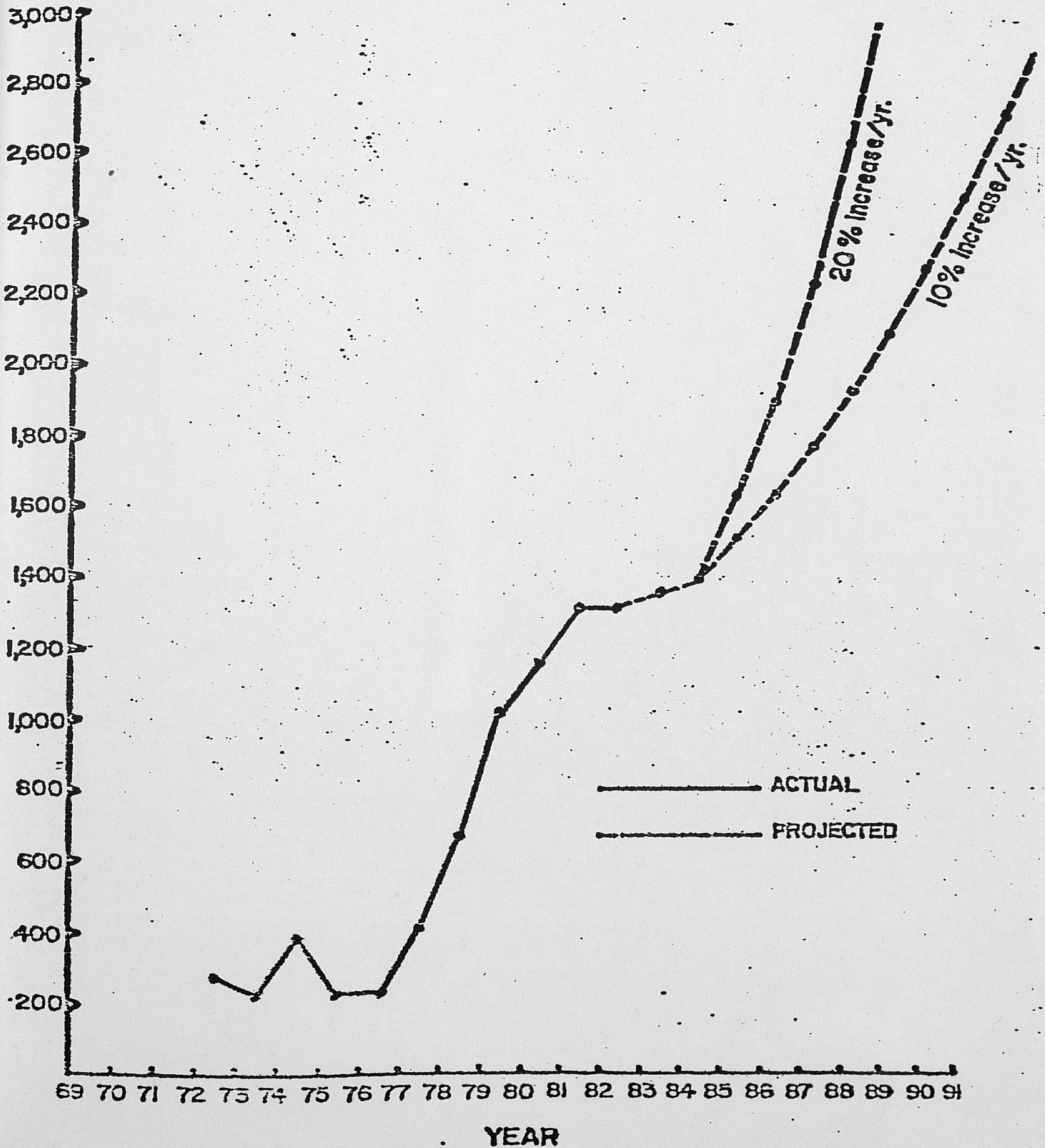
#### Environmental Engineering

The general areas of interest are water treatment, wastewater treatment, industrial wastes, atmospheric pollution control, solid waste management, and stormwater management. Both the natural and man-made environments are studied. Specific areas of current research are:  
(1) thermal destruction, (2) methane generation, (3) lake water quality



FIGURE 9.1

# SPONSORED RESEARCH FUNDING UCF COLLEGE OF ENGINEERING (Thousands of Dollars)



management, (4) metals in natural waters, (5) carcinogens in potable water, (6) grey water, (7) stormwater systems design, (8) stormwater impacts, (9) coal-fired plant effluents, (10) electrical power generation from solid waste water quality modeling.

### Electrical Engineering

Research activities in the Department of Electrical Engineering and Communications Sciences are focused on digital systems, electro-optics, optical communications and solid state devices. Research in digital systems includes the development of algorithms and architectures for real time systems with applications in computer generated imagery and training systems for the various branches of the military. Research in electro-optics includes the study of fiber optic sensors for fiber optic gyro rate sensing, hydrophones, temperature sensing, and pressure probes. The work on these systems has focused on use of optical phase locked loops, noise characteristics of different optical sensor configurations and environmentally induced optical noise. Also work is being conducted on the use of laser speckle interferometry for mechanical measurements. In optical communications the research has been on the measurement and mathematical modeling of the statistical fading of a laser beam propagating through atmospheric turbulence. Also research has been performed on communication techniques for reliable digital optical communication through the atmosphere. Research in the Solid State Devices Laboratory (SSDL) involves device design and analysis, fabrication, and testing. Currently a substantial research effort is being conducted in Surface Acoustic Wave (SAW) Technology. Computer aided design (CAD) tools have been established on a VAX computer system to analyze bidirectional and nondirectional transducers.

## Engineering Mathematics and Computer Systems/Computer Engineering

Research activities in computer systems has been concentrated on the design of interactive computer graphics systems. Some significant work has been done in the modeling of active and passive residential energy conservation systems, software engineering and data design for training systems, management information systems, robotics, and stochastic modeling.

## Industrial Engineering

Current research activities involve energy management, energy conservation and energy economics with a heavy emphasis on energy conservation within residential and commercial buildings. In addition, considerable research and development has been accomplished on the application of small computers in industrial engineering, human factors analysis in space systems, simulation of training systems and the use of artificial intelligence in training systems development.

## Mechanical Engineering

Major research emphasis are in energy systems, heat transfer, fluid mechanics, solid mechanics, materials science, experimental mechanics, control systems, tribology, and CAD/CAM. Currently, research projects are being conducted in pressure transient models for two-phase cryogenic systems, critical heat flux correlations in nuclear reactors, robotics, intelligent product design, powered mobility systems in rehabilitation, strain measurement by laser speckle spectral density, wear of dental restorative materials, tribology of impulsively loaded contacts and tool materials, transient and steady state equivalence in dynamic systems, feedwater systems for nuclear power, thermal storage, shock tube optimization, cogeneration in energy systems, biomass gasification systems, and power plant optimization.

Future research will focus on energy conversion and conservation, finite element modeling, computer based education, structural design for extreme loadings, laser measurement, boundary element applications in photoelasticity, tribology, optimization in energy systems, effect of heavy rain on aerodynamic performance, computational fluid mechanics, hybrid alternate energy systems, automation and CAD/CAM.

Engineering Technology

Current funded research activities involve energy conservation in the institutional and commercial sectors, and sinkhole data base development. Past research has included commercial roof structural failures, remote sensing applications, shipboard antenna positioning, and energy audits and energy conservation.

TABLE 9.1.1  
SPONSORED RESEARCH ACTIVITY  
IN THE COLLEGE OF ENGINEERING

<u>Academic Year</u>	<u>No. Proposals Submitted</u>	<u>Budget Requested</u>	<u>No. Proposals Funded</u>	<u>Fund Allocated</u>
1969-72	94	\$4,673,796	23	\$ 677,105
1972-73	32	841,606	15	255,905
1973-74	42	1,831,540	15	226,493
1974-75	56	4,442,649	17	387,287
1975-76	44	1,136,174	15	220,888
1976-77	46	1,748,987	10	220,391
1977-78	36	1,067,267	29	405,131
1978-79	62	2,640,251	49	675,461
1979-80	56	1,674,325	54	1,025,569
1980-81	57	3,071,129	33	1,158,251
1981-82	73	3,971,778	53	1,340,223
1982-83	68	6,631,551	55	1,338,472
1983-84 est.	86	4,666,425	55	1,672,416

TABLE 9.1.2  
FTE RESEARCH PERSONNEL  
IN THE COLLEGE OF ENGINEERING

	<u>Fall 1980</u>	<u>Fall 1984</u>	<u>-Projected- 5 years</u>	<u>10 years</u>
Faculty	13	14	26	52
Support Staff	4	6	7	10

## 9.2 Future Research Programs

During 1981-82 and 1982-83, funding for sponsored research activity in the College of Engineering leveled off at about the \$1.3 to \$1.4 million rate and this rate is not expected to increase significantly because of extremely critical space constraints in the existing Engineering Building. (However, sponsored research support during 1983-84 increased to approximately \$1.7<sup>0</sup> million due primarily to the use of portable building space for some limited research activities by the college of Engineering.) Presently the College of Engineering has less than 4000 square feet of space that is actually classified as assignable research space. Thus, the majority of the College's sponsored research activities has been carried on within teaching laboratories or at some location provided by a sponsor. These critical space constraints will most likely continue until the Phase I Engineering Building project has been completed wherein another 3900 sq. ft. of assignable research space has been designated. Additional research space is anticipated after Phase II of the CEBA complex has been completed and the temporary classrooms from Phase I have been converted to laboratories. Thus, it is projected that the growth rate in the sponsored research funding in the College of Engineering during the next ten years<sup>~</sup> will be in the 10 to 20 percent range as shown in Figure 9.1. During 1983-84 the research income per F.T.E. faculty researcher was \$117,333 compared to the 1982-83 national average of \$111,378.

The College of Engineering at the University of Central Florida has and will continue to interact with industrial organizations in Florida and the nation as a major component of its education, research, and service program activities. These activities are expected to have a very

positive impact on the continued growth of the sponsored research program. These interactions occur within or are related to the following basic programs and activities:

1. Industrial Associates Program
2. Industry Sponsored Research Projects
3. Industry Sponsored Graduate Fellowship and Scholarship Programs
4. Industry Foundation Grant Awards
5. Industry Students Work Study Programs
6. Industry CO-OP Programs
7. Special Education and Training Programs for Industry
8. Industry/University Design Projects Cooperation Activities
9. Adjunct Faculty from Industry
10. Engineering Faculty Consulting with Industry
11. Minority State Development Programs with Industry
12. Industry Equipment Grants or Loans

Descriptions and a few brief examples of industry/university interaction within these programs are given as follows:

1. Industrial Associates Program

Industrial Associates programs formalize relations between the University, and industry. A good example is the program with Martin Marietta Aerospace, Orlando, in which the University assists in the recruiting of recent bachelor degree engineering graduates and enables the completion of a Master's degree within a period of eighteen months while fully employed. This program produces employees educated at the graduate level in targeted technology areas and also provides opportunities for faculty and industry interaction.

2. Industry Sponsored Research Projects

Since its start-up in 1968, the College of Engineering at UCF has encouraged faculty interaction with industry in sponsored research activity. Under this program, industry provides funding through the College's Engineering and Industrial Station (EIES) to support faculty and graduate students on a part time basis to work on research projects of particular interest to individual industrial organizations or industry groups. Examples of a few such projects carried out during the past few years are given as follows:

- Martin Marietta Corporation...Investigation of the Integrated Proportional Navigation Guidance Law; Professor Radloff, Electrical Engineering.
- Florida Power Corporation... Evaluation of Magnetic Flux Treatment of condenser Cooling Waters; Mr. Henry, Mechanical Engineering.

- Texas Instruments, Inc...Computer Aided Design of Bidirectional Surface Acoustic Wave Transducers; Dr. Malocha, Electrical Engineering.
- American Electroplaters Society...Evaluation of the Pollution Control Effects of a New Device for Paint Drying and Curing; Dr. Cooper, Environmental Engineering.
- Applied Research, Inc...Laser Beam Control; Dr. Phillips, Electrical Engineering.
- Westinghouse Corporation...Flow Visualization in Feedwater Heater; Dr. Bishop, Mechanical Engineering.
- Actran Corporation...Pressure Gradient Hydrophone Feedback System Synthesis; Mr. Martin, Electrical Engineering.

### 3. Industry Sponsored Graduate Fellowship and Scholarship Programs

The recruitment of outstanding students into graduate study and research depends largely on the availability of flexible fellowship programs. Recent developments at UCF now assure graduate fellows in environmental engineering and construction engineering both available due largely to gifts from private sources.

### 4. Industry Foundation Grant Awards

Development of pilot programs, often pioneering new areas of academic services and instruction are greatly enhanced by private foundation grants. For example (a) a recent three-year grant by General Electric Foundation to support development of CAD/CAM instructional materials; and (b) the initiation this year of a three-year program aimed at guaranteeing a flow of minority students into local engineering programs under the auspices of a grant from the Westinghouse Educational Foundation.

### 5. Industry Student Work Study Programs

Local industry employs a large number of undergraduate engineering students on a part time basis. An example of a formalized program is with Martin Marietta Aerospace, Orlando. State work on a part-time basis while taking at least 12 hours of university registration. Students are allowed to work only a limited amount of time so that work does not interfere with degree programs. Also, work hours are flexible so that class schedules can be accommodated. The state must maintain a 2.5 grade point average in order to remain in the program. The University helps recruit the state and handles the payroll for a nominal overhead charge.

## 6. Industry CO-OP Programs

Since early in 1969 the University of Central Florida has operated a Cooperated Education Program Office which serves to place UCF students in CO-OP positions in both government and industrial organizations throughout Florida and other states. In the CO-OP program, a students will attend the university and work in a Co-OP during alternation semesters. At the present time over 75 UCF students are working positions with over half of those being engineering students. Most all of the larger Central Florida industries are ar have been participating in the CO-Op program and significant program growth is anticipated as new industries are attracted to the area.

## 7. Special Education and Training Program for Industry

UCF has produces a number of programs for continuing education at industrial sites. Specialized one and two day workshops have been developed in such areas as Project Management, Statist ical Quality Control, Microprocessors, Optical Systems, etc. We have also developed an extended 12 week, non credit course on digital systems which has been produced on video tape and delivered to several industrial sites. In addition, the majority of our graduate courses are taught in a studio and recorded on TV tape. These tapes are then delivered to area campuses and industrial sites for viewing at hours convenient for employed engineers. By this delivery method, industrial employees can earn a degree with a minimum of required trips to the main campus.

## 8. Industry/University Design Projects Cooperative Activities

An important part of the undergraduate program in Mechanical Engineering is the "senior capstone design course." In this, students are confronted with real engineering design programs which require creative application and synthesis of topics from structured curriculum.

The ideal source for such real engineering problems is industry. For example, General Electric's Robotis and Vision Systems Division in Plymouth is currently providing problems in areas of improved end-effector (robot gripper) design. Small groups of students then are led through academically structured but wholly realistic experience which results in conceptualization of alternative designs, identification of the most promising alternative, and development of a detailed prototype design.

The collaborative IndustryUniversity design activity results in a healthy and productive interaction between engineering practitioners, faculty and students as well as creative solutions to real problems.



9. Adjunct Faculty from Industry

The availability of a large pool of well qualified professional engineers in industry and governmental agencies provides a rich resource of adjunct faculty. Thus industry/university exchange assures that many pertinent and current real world design problems are introduced into the classroom. Recent adjuncts have been appointed from many local groups, e.g., Martin Marietta, Westinghouse, NASA, NTEC, Emerson, Stromberg, General Electric and local consulting firms.

10. Engineering Faculty Consulting with Industry

Engineering faculty represent a significant pool of technical expertise available for short term consulting assignments or for summer appointment. Such service represents a major asset to industry in need of specialized talent on an ad hoc basis and at the same time becomes an important professional development activity for participating faculty.

11. Minority Student Development Programs with Industry

(a) Pre-College: The Southeastern Consortium for Minorities in Engineering (SECME) is operated by 17 engineering schools in eleven southeastern states. The purpose is to encourage the study of mathematics, science and communications by minority students at pre-college levels and to enlarge their vistas of opportunity at the college level. Thus, an increasing flow of minority state into engineering in recent years has resulted. UCF operates a project in Orange County. Local industry has supported the SECME organization for several years.

(b) College Level: The National Action Council for Minorities in Engineering (NACME) supports undergraduate grants (scholarships) for minority engineering students at selected engineering schools throughout the nation. NACME funds (typically derived from gifts and grants by major industries concerned about improving the representation of minorities in the engineering profession) support 28 scholars at UCF this year.

12. Industry Equipment Grants or Loans

Because of limitations in state budget allocations, College of Engineering traditionally have difficulty in maintaining an inventory of reasonably up-to-date laboratory instrumentation, computers, and other technological equipment necessary to conduct meaningful laboratory exercises and research activities. Fortunately, many Florida industries have recognized this problem and have made such equipment available to engineering laboratories through direct equipment donations or loans. The College of Engineering at UCF has received many pieces of valuable and extremely useful equipment through this process over the past decade and some laboratory programs would

have not been possible without a number of critical items of equipment that were donated by industry. In recent years, for example, the development of the College's microelectronics laboratory was made possible by the donation of critical equipment items from the Harris Corporation, Martin Marietta Corporation and Piezo Technology, Inc. More recently, the development of the College's program in Computer Aided Design and Computer Aided Manufacturing ((CAD/CAM) was given a significant boost through the donation of two ADAGE type CAD/CAM work stations by the Martin Marietta Corporation

## 10. Computers

Due to the nature of its educational objectives, computers and computer applications are at the heart of the College of Engineering activities. The University's computer center (main system is IBM 4341) hardware and software are extensively used in both courses and research, where applicable. The College of Engineering has invested approximately \$1,000,000 in its own additional computer support equipment. The College of Engineering VAX minicomputer is accessible by modems from the 62 Digital Rainbow 100 microcomputers located in various faculty offices. Each department also has a DECmate II and printer. Each of the Rainbows can be used in a stand-alone mode, or as remote terminals for either the VAX or the IBM 4341.

In addition, the College has a rather eclectic collection of microcomputers from other manufacturers, including INTEL, APPLE, MOTOROLA, IBM and TEKTRONIX, which are also extensively used in teaching and research. Several College departments are active nationally in giving computer-oriented short courses or sponsoring computer-oriented article series in professional publications.

Current development for computer use in the areas of Computer-Aided-Design (CAD) and Computer-Aided-Manufacturing (CAM). These areas will develop rapidly in all departments over the next few years. Additional computer use is in the area of Robotics, which is also increasing rapidly.

Students are encouraged early to develop calculator/computer skills to assist them in their coursework. The following statement is made in the 1983-84 B.S.E. advisement Manual, and will be repeated in future editions:

#### Calculators and Computers

Rapid and accurate calculation ability is required of all engineering students. Homework and tests require a facility with appropriate calculators and, in many cases, micro-computers. Although the College has no specific requirement, following are general needs within the B.S.E. program.

- (1) During the first two years, students should possess a calculator or computer with all appropriate algebraic manipulations, exponentiation, and logarithmic and trigonometric functions.
- (2) During the last two years, the student should seriously consider (as a minimum) a programmable portable microcomputer of some sort, similar to the HP-75, CC-40, PC-2, TRS-100, PS-1500, or equivalent. Fundamental criteria for a portable micro-computer might include (1) 8K memory (minimum) (2) printing/graphics capability, (3) BASIC programming, and (4) interface with larger systems as a terminal. Programmable calculators or microcomputers are critically important in certain courses and are also very helpful in all engineering option courses.

Due to the increased level of activity in the secondary education in computers, it is anticipated that within 5 to 10 years, all entering students, whether Freshmen or transfers, will have increasing computer skills. Due to decreasing hardware costs, it is not difficult to imagine that a majority of students will have their own remote terminals at home or in the dorms. Thus the College does not anticipate that it will have to provide more and more terminals. However, it does appear that a major problem will be to assist the student with a home COMMODORE, TRS-80, ATARI, APPLE, TI, etc. to gain access to the UCF system. Currently the only relatively easy access is from IBM or DEC equipment. This access limitation must be solved or the College and University will not be able to assist these students and, indeed, will be forcing monopoly access on

them. This appears to be a more important problem than the mere collecting of more and more equipment.

In the area of computer instruction all B.S.E. students are required to have FORTRAN programming, which is still the workhorse of the scientific and technical community. Some students will take additional formal coursework in BASIC, PASCAL, Assembler Languages, etc. There is current discussion as to a method for giving the student more programming flexibility. It does appear that most will be comfortable with BASIC (for portable micro-computer use) and FORTRAN for the imminent future. Many students, of course, as well as faculty, pick up special-purpose languages on their own.

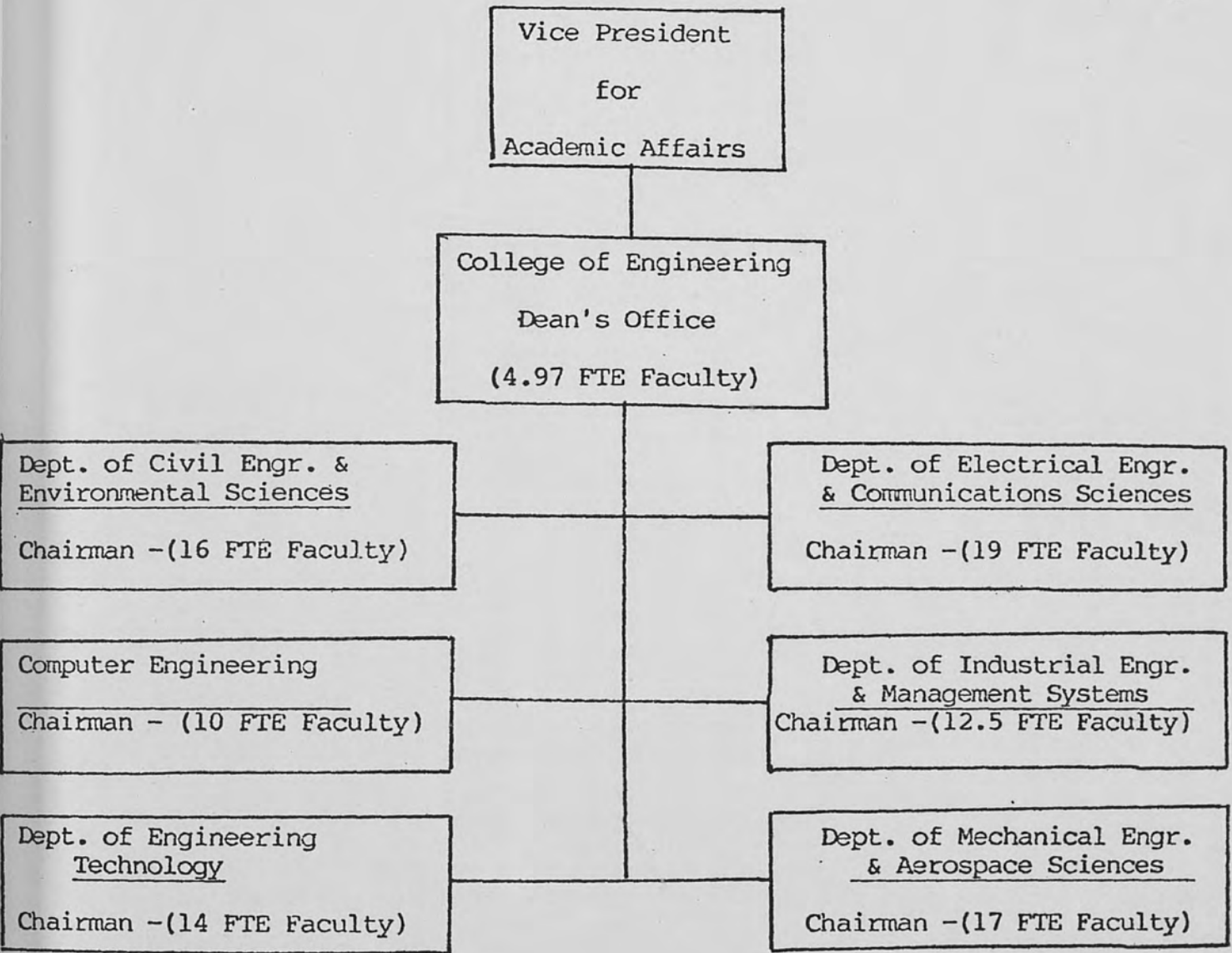
## 11. The Brevard, Daytona and South Orlando Campuses

### 11.1 Programs

Essentially all of our graduate programs are offered at each campus through the availability of the TV recorded classes. Administrative support is available at each campus enter for receiving, showing, and returning the tapes. The campus also provide support for proctoring examinations, receiving and returning homework, and reporting attendance. Counseling for the graduate students at the campus is handled by the faculty on the main campus by phone or occasional visits by the students to the main campus or the faculty to the campuses.

At the undergraduate level it is anticipated that the B.E.T. programs, in computer technology and electronics technology will become full-time programs at the Brevard Life Long Learning Center. Core courses for the B.S.E. programs will be offered at BLLL as appropriate.

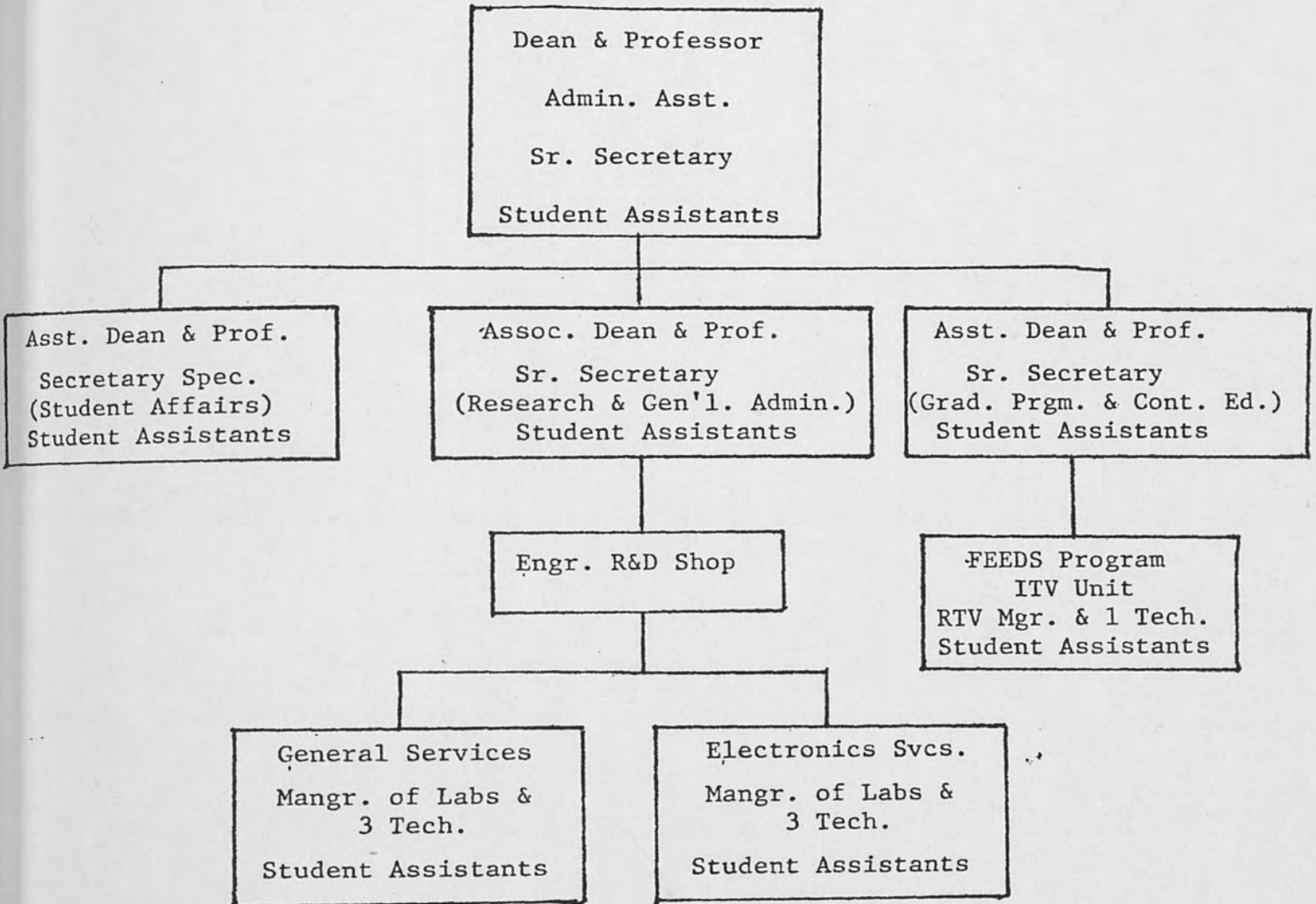
University of Central Florida  
College of Engineering



- NOTE: (1) Function presently (Spring 1984) managed by IEMS Department; expect separate departmental status by Fall 1984.
- (2) Total of 93.47 FTE Faculty does not include additional Visiting Faculty (2) proposed for EECES, SOCA Director (EECS), FSEC Director and Associate (CEES AND MEAS) and FSRI Director (CEES).

College of Engineering

Dean's Office



COLLEGE OF ENGINEERING  
Organizational Changes/Growth

ITEM	1968-69	1973-74	1978-79	1983-84
Dean's Office	1	2	3	4
Admin. Assistant I	1	1	1	1
Faculty	8	44	57	93.47
Secretarial	1	7	8	17
Technicians	1	4	6	11
Other Employees (Student Assistants)	1	57	92	165
Adjunct Faculty	0	1	8	15
Students Enrolled (Headcount)	184	724	1293	2651
Departments (2)	None	5	5	5
R&D	No	Yes	Yes	Yes
Instructional TV	NO	Yes	Yes	Yes
Sponsored Research (\$1,000's/Year)	None	551	1048	1672
Engineering & Industrial Experiment Station	No	No	Yes	Yes
Institutes and Center (3)	None	2	3	5
Laboratory Equipment (Book Value \$1,000's)	8	633	2064	8115

- NOTES: (1) Start-up year was 1968-69  
 (2) Expect sixth department in 1984  
 (3) Environmental Systems Engineering Institute (1971-72)  
 Transportation Systems Institute (1971-72)  
 Institute for Simulation and Training (1982-83)  
 Florida Sinkhole Research Institute (1983-84)  
 State Technology Applications Center (1976-77)

## COLLEGE OF ENGINEERING

## Dean Activity Categories

1. University Administration
  - 1.1 Dean's Council (AAAS)
  - 1.2 Administrative Council
  - 1.3 President's Advisory Council
  - 1.4 Misc. Committee and Office Activities
    - (a) Limited Access (Ad Hoc)
    - (b) TBA
  - 1.5 SUS Engineering Dean's Council - Comm. College Articulation
2. COE Administration
  - 2.1 Chairman's Council
  - 2.2 Individual Chairmen, Associate Dean, and Assistant Deans
  - 2.3 Systems and Procedures Coordination
    - a. Dean's Office Integrated File System and Coding
    - b. Forms inventory and control
    - c. Information systems coordination (ref. E&G Budget process)
      - (i) Statistical Data Base Design
      - (ii) Data Base update
      - (iii) Semester headcount
      - (iv) Productivity Computation and Analysis
    - d. Data processing
  - 2.4 Faculty Meetings
    - a. Dean's Faculty Advisory Council
    - b. General Faculty Meetings
  - 2.5 Student Affairs
    - a. Dean's Student Advisory Council
    - b. Student Conservation Task Force
    - c. SECME
    - d. NACME
  - 2.6 Personnel Administration
    - a. Classified Employees
    - b. Faculty
      - (i) Recruitment/retention
      - (ii) Promotion/tenure
      - (iii) Evaluation/development
      - (iv) College Personnel Committee
      - (v) Leaves of absence
    - c. Personnel Evaluation Files
  - 2.7 Scholarships and Awards
    - a. Honors and Awards Committee
    - b. Scholarship Activities
  - 2.8 Faculty Assignments
  - 2.9 Annual Report
    - a. Departments and College
    - b. Academic Affairs



3. Research
  - 3.1 General Administration
  - 3.2 Director UCF-EIES and Assoc. Director UF-EIES
4. Budget Affairs
  - 4.1 Allocation model process
  - 4.2 COE Allocations
  - 4.3 Internal Control and Coordination
  - 4.4 Released Time/Fund Transfers
  - 4.5 Salary Administration
5. Program Planning
  - 5.1 Role and Scope SUS/UCF/COE - SUS Five Year Plan
  - 5.2 Accreditation SACS/ABET
  - 5.3 Program Review SUS
  - 5.4 Special Activities  
(e.g. RETRO, FSEC, Genesys, BOR/SET, FEEDS, etc.)
  - 5.5 General Catalog Revision Coordination
6. External Affairs
  - 6.1 Board of Visitors
  - 6.2 UCF Foundation/Industrial Associates
  - 6.3 School and Community Relations
  - 6.4 ABET and SACS Visiting Committees
  - 6.5 ASEE-E\_C\_C\_/ERC Affairs
7. Scholarly Activities (as appropriate)
  - 7.1 Teaching
  - 7.2 Research
  - 7.3 Service
8. Excellence
  - 8.1 Role in developing national visibility for the College
  - 8.2 Service on State and National bodies (as appropriate)

## COLLEGE OF ENGINEERING

## Associate Dean Activity Categories

1. University Administration
  - 1.1 Act in Dean's Absence
  - 1.2 Administrative Council
  - 1.3 University Space Committee
  - 1.4 Chairman's Council
  - 1.5 Coordination with DSR
2. COE Administration
  - 2.1 Act in Dean's Absence
  - 2.2 Chairman's Council - Secretary
  - 2.3 Individual Faculty re Research matters
  - 2.4 Facilities allocation and coordination
    - a. Faculty Offices
    - b. Laboratories
    - c. Graduate Assistant Offices
    - d. Research/Special Spaces
  - 2.5 Building 12 Coordinator
3. Research
  - 3.1 Sponsored Research Program
    - a. UCF-EIES Associate Director
    - b. Promotion and Coordination
    - c. Budget Coordination
    - d. Released time (scheduling/coordination with teaching program)
    - e. Research Committee
  - 3.2 Institutes - monitor activity
    - a. ESEI Committee
    - b. TSI Committee
    - c. IST Executive Committee
  - 3.3 Non-Sponsored Research Program
  - 3.4 Systems and Procedures Coordinator
    - a. D.O. Integrated File System and Coding - Research
    - b. Sponsoring Agency Information
    - c. Information System Coordinator (ref: Research)
      - i. Statistical Data Base Design
      - ii. Data Base Update
      - iii. Semester Reports
      - iv. Review and Analysis
4. R & D Shop Administration and Supervision
  - 4.1 Personnel Administration
  - 4.2 Work order processing
  - 4.3 Budget administration
  - 4.4 Facilities/equipment maintenance and repair
  - 4.5 Equipment acquisition and disposal
  - 4.6 Data recording and analysis

5. COE Property Coordination
  - 5.1 Office Furniture Exchange
  - 5.2 R & D Shop Properties
  - 5.3 COE Department Properties Coordinator
  - 5.4 Surplus Property Acquisition and Disposition
  - 5.5 Annual Property Verification Coordinator
  - 5.6 Key Authorization and Control
  
6. Miscellaneous
  - 6.1 STAC Program Coordinator
  - 6.2 ASEE ERC/ECC Activities
  - 6.3 Wordprocessor Coordinator
  
7. Scholarly Activities (as appropriate)
  - 7.1 Teaching
  - 7.2 Research
  - 7.3 Service
  
8. Excellence
  - 8.1 Role in developing national visibility for the College
  - 8.2 Service on State and National bodies (as appropriate)

## COLLEGE OF ENGINEERING

Assistant Dean Activity Categories  
(Student Affairs)

1. University Administration
  - 1.1 Administrative Council
  - 1.2 Chairman's Council
  - 1.3 Coordination with Assoc. VPAA re Class Schedule
  - 1.4 UCF Scholarship and Financial Aid Committee
  - 1.5 UCF Undergraduate Curriculum Committee
  - 1.6 Ad Hoc General Education Program Committee
  
2. COE Administration
  - 2.1 Act in absence of Asst. Dean - Graduate Programs
  - 2.2 Chairman's Council
  - 2.3 Individual Chairman re: class schedule
  - 2.4 Miscellaneous committees and office activities
    - a. College Academic Standards Committee
      - (i) COE-Curricula
      - (ii) ESP - General Education
    - b. COE Curriculum Committee
    - c. Math/Stat Coordination Committee
    - d. Physics Coordination Committee
    - e. Computer Science Coordination Committee
    - f. Orientation Program Committee
  - 2.5 Student Evaluation of Teaching
  - 2.6 Undergraduate Program Coordination
    - a. New course and course change proposals
    - b. Program correspondence/recruiting
    - c. Advise undecided BSE students
    - d. Development of brochures and program information
    - e. B.S.E. Advisement Manual
  - 2.7 Engineering Core Textbooks/Review Departmental Requests
  - 2.8 Catalog Revision Coord - ENGR/ENT Core
  
3. Course Scheduling
  - 3.1 Semester schedule preparation/Classroom Use/Departmental Coordination
  - 3.2 Registration (scheduling, coordination, etc.)
  - 3.3 Registration supervision for COE
  - 3.4 Data recording and analysis
  
4. Student Records Coordination
  - 4.1 Change of major
  - 4.2 Change of grade
  - 4.3 Curriculum Petitions
  - 4.4 BSE/BET Applications for Graduation
  - 4.5 Standardization of student files
  - 4.6 Curriculum checksheet update

5. Relations with Community Colleges and High Schools
  - 5.1 Counseling Manual update
  - 5.2 Visitation Coordination
  - 5.3 Preparation of visitation and presentation materials
  
6. Miscellaneous
  - 6.1 EI Examination Coordination
  - 6.2 PE Refresher Liaison
  - 6.3 Co-op Program Coordination
  - 6.4 Engineering Interdisciplinary Program
  - 6.5 NCFA Coordination
  - 6.6 D.O. Representative: Joint Council of Engineering Student Societies
  - 6.7 Observer: Informal Academic Hearings
  - 6.8 Minority Program Activities
  
7. Scholarly Activities (as appropriate)
  - 7.1 Teaching
  - 7.2 Research
  - 7.3 Service
  
8. Excellence
  - 8.1 Role in developing national visibility for the College
  - 8.2 Service on State and National bodies (As appropriate)

## COLLEGE OF ENGINEERING

Assistant Dean Activity Categories  
(Graduate Programs and Continuing Education)

1. University Administration
  - 1.1 Administrative Council
  - 1.2 Chairman's Council
  - 1.3 Coordination with Dean Graduate Studies
2. COE Administration
  - 2.1 Act in absence of Assistant Dean Student Affairs
  - 2.2 Chairman's Council
  - 2.3 Individual Chairman re: Graduate Programs, Continuing Education and Educational Conferences
  - 2.4 Misc. Committees and Office Activities
    - a. Doctoral Planning Committee
    - b. Library Committee
    - c. Graduate Council
    - d. Faculty Seminar
  - 2.5 Non Resident Tuition Waivers
  - 2.6 ITV Supervision and Coordination
  - 2.7 Catalog Revision Coordination - Graduate
3. Graduate Program Development
  - 3.1 Graduate forms processing
  - 3.2 Graduate program coorespondence
  - 3.3 Data recording and analysis
  - 3.4 Graduate recruiting
  - 3.5 Doctoral program development
  - 3.6 Development of brochures and program information
  - 3.7 Graduate Co-op/Intern/Industrial Associate Activities
4. Graduate Records Coordination
  - 4.1 Program of Study Changes
  - 4.2 Change of grade
  - 4.3 Petitions
  - 4.4 MS/MSE/MSESM/Ph.D Application for Graduation
5. Miscellaneous
  - 5.1 ASEE - Graduate Studies & Continuing Engineering Studies Divisions
  - 5.2 Audio/Visual Tutorial Program
  - 5.3 Non-Traditional Educational Services - Place bound/External
  - 5.4 Minority Program Activities
6. Scholarly Activities
  - 6.1 Teaching
  - 6.2 Research
  - 6.3 Service

7. Excellence
  - 7.1 Role in developing national visibility for the College
  - 7.2 Service as State and national bodies (as appropriate)

## COLLEGE OF ENGINEERING

## Chairman Activities

1. University Administration
  - 1.1 Chairman's Council
  - 1.2 Administrative Council
  - 1.3 Ad Hoc Committee and Office Activities as assigned
  - 1.4
  
2. COE Administration
  - 2.1 Chairman's Council
  - 2.2 Dean's Office
  - 2.3 Functional Associate and Assistant Deans
  - 2.4 Systems and Procedures Coordination - Department
  - 2.5 Faculty Affairs
    - a. Individual Faculty
    - b. Faculty Meeting
    - c. Faculty Assignments
    - d. Program Planning
  - 2.6 Student Affairs - Graduate and Undergraduate
    - a. Ad Hoc Student Problems
    - b. Advising/Counselling
    - c. Prospective Student/Recruiting
    - d. Scholarship and Financial Aid
    - e. Student Records
    - f. Relations with Student Societies
  - 2.7 Personnel Administration
    - a. Classified
    - b. Faculty
      - (i) Recruitment/Retention
      - (ii) Promotion/Tenure
      - (iii) Evaluation/Development
      - (iv) Department Personnel Committee
    - c. Annual Working Files
  - 2.8 Departmental Annual Report
  - 2.9 Facilities Supervision
    - a. Assigned Laboratories and Special Use Space
    - b. Equipment acquisition use, maintenance, inventory, etc.
    - c. Coordination with R & D Shop
  
3. Research
  - 3.1 Promotion and Coordination Sponsored Research Program
  - 3.2 Release Time (Scheduling/Coordination with teaching program)
  - 3.3 Faculty Assignments/Budget Coordination
  - 3.4 Institutes (as appropriate)
  - 3.5 Non-Sponsored Research Program
  - 3.6 Articulation with Graduate Program and COE Objectives
  
4. Course Scheduling



5. Budget Affairs
  - 5.1 COE Allocation Process
  - 5.2 Departmental OPS, EXP, and OCO
6. Miscellaneous Activities
  - 6.1 Special Activities (as assigned)
  - 6.2 External Activities (as assigned)
7. Scholarly Activities
  - 7.1 Teaching
  - 7.2 Research
  - 7.3 Service
8. Excellence
  - 8.1 Role in developing national visibility for the Department
  - 8.2 Service on State and National bodies (as appropriate)

COLLEGE OF ENGINEERING  
Dean's Office Staff Functions

Administrative Assistant - Dean's Office, College of Engineering

1. Acts as Office Manager for Dean's Office.
2. Maintains current policies and procedures for College, University and State system to provide information to College personnel.
3. Responsible for College payroll process.
4. Responsible for College Personnel Evaluation Files.
5. Provides supervision for College Word Processing operation.
6. Provides backup for Dean's secretary.

Secretary IV - Dean, College of Engineering

1. Provides secretarial support to Dean of the College of Engineering.
2. Responsible for maintaining leave records for Dean's Office personnel.
3. Provides backup for Admin. Asst. and Assoc. Dean's secretary.
4. Handles College scholarship process.

Secretary IV - Associate Dean, College of Engineering

1. Provides secretarial support for Associate Dean of the College of Engineering.
2. Maintains accurate budget records for the EIES Research Accts.
3. Responsible for maintenance of files and payroll records for R & D Shop student assistants.
4. Responsible for maintenance of Xerox room.
5. Provides backup for Word Processing Operator.

Secretary IV - Assistant Dean, College of Engineering

1. Provides secretarial support for Assistant Dean of Graduate Studies for the College of Engineering.
2. Provides support for Graduate Studies functions for College.
3. Responsible for maintenance of File Room and Conference Room.
4. Responsible for maintenance of files and payroll records for ITV student assistants.
5. Provides backup for Undergraduate Studies secretary.

Secretary III - Assistant Dean, College of Engineering

1. Provides secretarial support for Assistant Dean of Undergraduate Studies for the College of Engineering.
2. Serves as primary telephone receptionist.
3. Responsible for maintenance of files and payroll records for Dean's Office student assistants.
4. Maintains Catalog File.
5. Provides backup for Graduate Studies secretary.

Word Processing Systems Operator - College of Engineering

1. Provides Word Processing support for the Dean's Office
2. Provides back up word processing support for College Secretaries.

College of Engineering

Typical Departmental Staff Functions

Senior Secretary (Lead Departmental Secretary)

1. Provides secretarial support for Department Chairman and Faculty.
2. Responsible for overall office management.
3. Responsible for department budget process.
4. Maintains departmental budget ledgers.
5. Processes purchasing and financial paperwork.
6. Responsible for undergraduate work and graduate files. Processes necessary paperwork for graduation.
7. Handles travel arrangements and reimbursements.
8. Prioritizes work schedule for word processing system.
9. Delegates duties necessary.

Secretary Specialist

1. Provides backup to Lead Secretary.
2. Handles travel arrangements and reimbursements for Chairman and Faculty.
3. Responsible for graduate files. Processes paperwork for graduation.
4. Handles various research budget ledgers as required.
5. Handles large volumes of typing, often using word processing equipment.

Clerk Typist III

1. Provides general secretarial support to departmental faculty.
2. Acts as primary receptionist; answers telephones and greets visitors.
3. Handles test and syllabi for department faculty, sometimes using word processing equipment.

UNIVERSITY OF CENTRAL FLORIDA

BOARD OF VISITORS

COLLEGE OF ENGINEERING

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Engineering Education Project Office  
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Dr. John Traexler, Manager  
STG Engineering Department  
Westinghouse Electric Corporation  
The Quadrangle  
Orlando, FL 32817

Senator John Vogt  
1980 N. Atlantic Ave., Rm. 902  
Cocoa Beach, FL 32931  
(305)

TABLE 1  
STATES LEADING IN FEDERAL R & D SUPPORT  
FY 1981  
Rank by Performing Sector

<u>State</u>	<u>Total</u>	<u>Industrial</u>	<u>Federal Intramural</u>	<u>Universities &amp; Colleges</u>	<u>FFRDCS*</u>	<u>Other Non Profit</u>
California	1	1	2	1	1	2
Maryland	2	5	1	5	14	6
Massachusetts	3	2	11	2	5	1
FLORIDA	4	3	5	16	--	23
New York	5	8	15	3	3	3
New Mexico	7	24	12	28	2	16
Virginia	8	9	6	20	13	8
Ohio	9	12	4	9	18	9
Pennsylvania	10	16	8	4	6	5
Washington	11	7	19	12	8	11
D.C.	12	25	3	26	20	4
Tennessee	13	10	20	21	7	24
Missouri	14	6	32	14	--	15
New Jersey	15	13	9	22	11	28
Colorado	16	15	17	15	9	17
Illinois	17	29	22	7	4	7
Alabama	18	22	7	24	--	18
Connecticut	19	14	39	11	19	27
Kansas	20	11	46	32	--	35
Arizona	21	21	14	27	16	31
Michigan	22	23	24	8	--	13
Louisiana	23	17	29	29	--	33
Minnesota	24	20	34	18	--	12
Utah	15	19	27	23	--	39
Nevada	26	18	30	47	--	20
North Carolina	27	30	16	10	--	14
Georgia	28	27	22	19	--	21
Rhode Island	29	35	13	30	--	22
Indiana	30	28	28	17	--	38

\*Federally Funded R & D Centers