Journal of Tau Alpha Pi
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Journal of Tau Alpha Pi

Tau Alpha Pi Journal is the official publication of Tau Alpha Pi, National Honor Society of Engineering Technologies. Write Professor Frederick J. Berger (Executive Secretary), Editor, P.O. Box 266, Riverdale, New York 10471. The opinions expressed are those of contributors and do not necessarily reflect those of the editorial staff of Tau Alpha Pi.

Statement from the Executive Director - Secretary

The Journal has published professional and scholarly articles for six consecutive years. It has included, also, news items and information of interest to the members of our society. Since the chapters of Tau Alpha Pi are autonomous, the Journal is virtually the only publication to be read by all of them. As the executive secretary of Tau Alpha Pi, I take pride in editing our annual Journal, which has earned the respect of the technology profession.

For news items and information to be included, it is necessary for chapters to forward information to me. Please address all correspondence to me at P.O. Box 266, Riverdale, New York 10471. Names of chapter officers should be listed on the report of chapter news. Please note that I am no longer at my college and, therefore, all mail must be addressed to national headquarters as indicated.

The journal, furthermore, provides the opportunity for professionals to submit articles relevant to the engineering technologies and to share scholarship and technological developments with peers and students. Every article submitted is given careful consideration and editorial review.

This academic year saw more new chapters chartered than any other single year: Beta Nu at New York Institute of Technology; Gamma Alpha at the University of Cincinnati; Zeta Gamma at Texas A and M University; Kappa Beta at Anne Arundel Community College; Nu Beta at Southern Illinois University (Carbondale); Omicron Epsilon at Middlesex County College; Nu Delta at De Vry Institute of Technology (Chicago); Alpha Kansas at Kansas State University; Beta Louisiana at Nicholls State University; and Alpha Washington at Cogswell College
North.

As executive director, I am pleased to see the increasing number of chapters. I had the privilege to be present at the chartering ceremonies of some of these chapters: Beta Nu, Omicron Epsilon, Nu Delta, and Alpha Kansas. Where I could not attend because of compelling reasons, I was most ably represented. I want at this time to thank Dean Larry Wolf (Zeta Alpha, University of Houston) for attending the ceremonies of Zeta Gamma at Texas A and M University; Professor Paul F. Bennett (Pi Epsilon, Indiana State University) and Professor Carl H. Dietz (Epsilon Beta, St. Louis Community College, Florissant Valley) for attending the ceremonies of Nu Beta at Southern Illinois University, Carbondale; and Professor John Tridico (Kappa Alpha, Capitol Institute of Technology) for assisting Kappa Beta at Anne Arundel Community College in drafting its constitution and bylaws.

To the sponsors of these new chapters who had the foresight to establish chapters on their campuses and by so doing, to help us to upgrade the professional status of the technologies, I extend many thanks: Dr. E. Kafrissen of Beta Nu; Dean Cheryll A. Dunn of Gamma Alpha; Dr. Russet E. Puckett of Zeta Gamma; Dr. William Mumford of Kappa Beta; Dr.Jefferson F. Lindsey of Nu Beta; Professor Thomas Handler of Omicron Epsilon; Dr. Demetrios Kyriazopolos and Dean Clydell H. Hoffman of Nu Delta; Professor Margaret A. Yaege and Dr. John C. Lindholm of Alpha Kansas; Dr. Charles J. Monier of Beta Louisiana; and Dr. Ronald C. Pare of Alpha Washington.

From time to time some faculty leave their positions as chapter advisers. To these dedicated people who have served well, I express my gratitude: Professor

Nicola Berardi of Beta Kappa; Mr.John Kovan of Epsilon Alpha; Dr. Richard Phelps of Eta Beta; Professor Charles Golab of Iota Beta, Pennsylvania State (Mont Alto Campus) and Professor Charles H. Taylor,Jr. (Ogontz Campus); Professors James R. Ehrenberg, Fred S. Friedman, William J. Phaklides, VVilliam R. Baker, and Dr. Willis A. Finchum of Xi Delta; Dr. Ronald E. Pare of XI Gamma; Professor R.E. Nix of Pi Alpha; Dr. Bhaskar S. Chaudhari of Sigma Alpha, and Dr. Anne Hyde of Iota Gamma.

To the dedicated faculty who have recently assumed the positions of chapter advisers, I want to convey my congratulations and wishes for success: Professor Arthur Hurlbutof Beta Nu; Professor Donald P. Moore of Gamma Delta; Professor Richard A. Bain of Epsilon Alpha; Professor Ronald S. Strawn of Upsilon Beta; Professor Joe P. Hedrick of Zeta Alpha; Professor T.D. Wilkinson of Iota Beta of Penn State (Mont Alto Campus) and Professor Byron M. Robinson of Iota Beta (Ogontz Campus); Professor Franklin P. Abshire of Xl Delta; Professor David Smith of Xl Gamma; Professor Ralph Johnson of Sigma Alpha; Professor Gregory D. Wight of Chi Beta; ProfessorJohn D. McLaren of Alpha Kentucky; Dr. Ronald Pare of Alpha Washington; and Professor Howard 1. Medoff of Iota Gamma.

Of course, many thanks are due to many advisers who have served and continue to serve devotedly.

Special thanks are due to faculty who have contributed to Tau Alpha Pi in unique ways: Professor Louis V. Waitkus ol Gamma Upsilon introduced a gold ring bearing the emblem of the society. Dr. Warren G. Keith, director emeritus, University of Alabama (Alpha Alabama), constructed a 3” x 4” wooden key, mounted it on velvet, and presented it to me. In addition, he prepared a scaled drawing of the key. Dr. Cheryll A. Dunn, dean at University of Cincinnati, reactivated Gamma Alpha chapter and on May 3, 1982, initiated 21 new members. I wish her well and many years of successful leadership.

Two members of Tau Alpha Pi earned a meritorious certificate with which I presented them: President James P. Todd, Vermont Technical College, for long years of continuous and arduous service in the interests of Tau Alpha Pi; and Mr. John W.G. Chin, Cogswell College, for the excellent aluminum casting and construction of the key measuring 15” x 23” x **1/2”** that was presented to me at the ASEE luncheon in February, 1982, by President Dalhart R. Eklund and Dean Pare in recognition of my service to the engineering technologies. To President Eklund I express appreciation of his dedicated service to the society and the engineering technologies.

Recently, I was honored with an invitation to the presidential inauguration of Dr. Betty Lentz Siegel at Kennesaw College, Marietta, Georgia. Unfortunately, I could not attend. I want to thank President Stephen R. Cheshier of Southern Technical Institute for representing me and Tau Alpha Pi at the inauguration.

To Dr. William Byer of the University of Alabama and to Dr. Frank Ross Stewart I express personal thanks for presenting me with an honorary doctorate in recognition of “faithful service and valuable contributions” to the engineering technologies profession. This presentation was timed to coincide with a testimonial in my honor on May 31, 1981, at which time I received over eighty letters of tribute. To all of you who wrote and to those over hundred who attended, I express my appreciation.

The scroll, a copy of which appears in the centerfold of this Journal, was given to me on May 31, 1981 in recognition of my service to the college, to the engineering and engineering technologies professions, and Tau Alpha Pi. I am grateful to President Brown and to my colleague who composed and designed it and presented it to me.

Certainly, my appreciation and deep gratitude go to Dr. Lillian Gottesman for coordinating my testimonial dinner-dance and also for most ably assisting in editing this Journal.

As we look ahead to our future endeavors, there are three items to which I call your attention. There ~is increasing need for each chapter to maintain an up-to-date file of alumni members of Tau Alpha P1, including addresses and telephone numbers, in order to keep in contact, to reinforce alumni identification with and loyalty to the college, and to be able to obtain from them current industrial information p6rtinent to our profession. As you know, our chapters are autonomous, and so national headquarters do not maintain addresses of members, and chapters should have their own computerized updated record which, if requested, should be available at the local level.

The second and third items concern improving the visibility of Tau Alpha Pi on campus. One way to accomplish this goal is to have a casting of the key cemented on concrete in close~roximity to the engineering technologies building. Another way is to have sashes designed bearing the Tau Alpha Pi emblem and colors that can be worn by our members at commencement exercises and on other formal occasions. And, of course, still another way is to display the engraved charter. If you have not received your engraved charter, please be in touch with me.

Tau Alpha Pi as an honor society extends recognition to students of superior scholarly achievement, leadership qualities, and noble character. Its sublime purposes and goals merit wide publicitywhich can be attained through replicas of keys, sashes, banners, and other displays and, most significantly, through the exemplary conduct of its members.

I look forward to seeing more of you at the A.S.E.E. annual conference on June 20-24 at Texas A and M University. We shall have the opportunity to discuss our mutual concerns regarding Tau Alpha Pi.

Frederick J. Berger

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Presentation of Replica of Tau Alpha Pi Key to Prof. Frederick Berger Left to right: Dr. Dalhart R. Ekiund (President of Cogswell College, San Francisco), Prof. Frederick Berger, Dean Ronald C. Pare'.

AN ENGINEERING TECHNOLOGY COURSE FOR NUCLEAR POWER PLANT OPERATORS: A NEW EXPERIENCE

The world is entering a new era of nuclear energy as a result of the oil shortage. It is generally recognized that more and more electric energy in this country will depend upon nuclear power generation as an alternative. Numerous nuclear power stations are, therefore, either currently in operation or under construction throughout the United States.

After the Three Mile Island incident, the report submitted by the President's Commission on the Accident at Three Mile Island indicated: "The accident was initiated by mechanical malfunction in the plant and made much worse by a combination of human errors in responding to it."[1] An incident such as this has made nuclear safety a top priority and challenge to scientists, engineers, and technologists to ensure maximum safety for nuclear power plants.

Nuclear power plant operators often face certain kinds of uncertainty which necessitate major decisions. Human errors, especially operator errors, in a nuclear power plant have drawn much attention to the nuclear industry regulators. To eliminate the errors, adequate basic trainingwhich trains operators to respond to emergencies is a must.

To implement basic training for the power plant personnel and to fulfill the requirements of the federal and state regulatory agencies, the Technical Training Center of the Duke Power Company at McGuire Nuclear Power Plant, North Carolina, and the Office of Continuing Education of the University of North Carolina at Charlotte (UNCC) in a joint effort offered a 42 - hour course in thermodynamics to the nuclear power plant operators to develop basic sound technical knowledge. The course was conducted and taught by the Department of Engineering Technology at UNCC during the summer of 1980 (from May 29, 1980 through August 14,1980, everyThursdayfrom 1:00 p.m. to 5:00 p.m.). I was the instructor.

Twenty-two people enrolled, coming from the three different nuclear power plants located in the Carolinas. The backgrounds of the participants were as follows:

1. High school graduates with military nuclear power experiences.
2. B.S. graduates with military nuclear power experiences.
3. B.S. graduates in chemical and electrical engineering.
4. B.S. graduates in mathematics.
5. Candidates for engineering degrees.

Several students had taken a thermodynamics course previously.

The textbook Elements of Applied Thermodynamics by Johnston, Brockett, Bock, and Keating proved to be the most effective selection for the purposes of this course, incorporating the following outline:

Introduction and the First Law of Thermodynamics
Units
Working Substances and Properties
Specific Volume, Specific Weight, and Density
Pressure and Temperature

Kinetic, Potential, and Internal Energy
Heat and Mechanical Work
Flow Work
The First Law and the Steady Flow Energy Equation Basic concepts and the Non-Flow Process
Properties, States, and Processes
The Reversible Process
The Energy Equation for Non-Flow Process, and the P-V Diagram
Enthalpy, Entropy, and the 1-S Diagram
Specific Heats
Gases and the Non-Flow Gas Processes
Gas Law
The Polytropic Process Equation
Non-Flow Reversible Gas Processes
Work and P-V Diagram
Internal Energy and Enthalpy of a Gas
The Air Table Steam
Saturation Lines
The Steam Tables
The Saturated Liquid and Saturated Vapor
The Wet Vapor, and Superheated Vapor
The Compressed Liquid
The P-V Diagram, 1-S Diagram, and Mollier Chart of Steam
Reversible Non-Flow Processes with Steam Steady Flow Processes
Energy Equation for Steady Flow
Nozzles, Turbines, and Boilers
Liquid Pumps and Compressors
Throttles
The Throttling Calorimeter
Heat and Energy Balance
The Second Law of Thermodynamics
Cycles
Thermal Efficiency and the Second Law
Irreversibility
Ideal Cycle Analysis
Work

Carnot Cycle
Available Energy
Actual Thermal and Engine Efficiencies
Entropy as an Index of Unavailability and Irreversibility Steam Power Cycle
The Rankine Cycle and Rankine Reheat Cycle
The Rankine Regenerative Cycle
The Rankine Regenerative Reheat Cycle
Nuclear Reactor Steam Plants and Cycles Heat Transmission
Steady-State One- Dimensional Conduction

During the instruction period, Duke Power Company offered me a three-day tour of its McGuire Nuclear Power Plants, Units 1 and 2. I visited the simulated control rooms, the computer center, the thermal lab and the environmental lab at the Technical Training Center. I had also opportunities to discuss with several of the engineers some practical on-the-site engineering problems in relation to thermodynamics and heat transfer. This gave me an insight into preparing afuture course with emphasis not only on theoretic technical knowledge, but also on practical industrial needs.

The subjects discussed during the three-day tour covered simulated pressurizer relief line effect, steam generator water level measurement system, feedwater and steam flow in the steam generator, heat balance of the McGuire Nuclear Station Units 1 and 2, and the TMI accident. These topics can definitely serve in the future as case studies for the university's thermodynamics classroom.

Because of the limited time, topics such as gas cycles, air compression, steam turbine, and refrigeration cycles were omitted from the course outline. But the properties of steam, use of steam table and the Mollier Chart, steady flow process, and steam power cycle were strongly emphasized.

This thermodynamics course was offered at the engineering-technology level. When reviewing the evaluation reports from the participants, I found them to be most positive, indicating that the course was highly satisfactory and met the students' expectations. The report also made known to me that many engineering topics, such as engineering mathematics, fluid flow, heat transfer, mechanical systems, HVAC, electrical theory nuclear physics, reactor theory, radiation protection, power cycle component testing, engineering materials, and waste-water engineering, were of great interest to and needed by the participants.

The engineering technology program at the University of North Carolina at Charlotte is a two-year program accredited by ABET, It offers civil, electronic, and mechanical engineering technology courses in preparation for the BET degree.

The experience described in this paper points to the importance for a close and direct technical cooperation and working collaboration between industry and engineering-technology education. Only through such joint efforts can the utilization of energy be safer.

Pao-lien Wang
University of North Carolina at
Charlotte

1 "Report of The President's Commission on the Accident at Three Mile Island," (October 1979), p. 2.

THE OTHER SIDE OF ENGINEERING TECHNOLOGY: SOCIAL TECHNOLOGY

One significant aspect of project-based efforts in a manufacturing environment is their high propensity for failure. For example, it is not uncommon for an engineer to utilize any number of the “appropriate” technological methodologies in order to effect project implementation and yet still fail to achieve the desired outcome which was originally envisioned for the project.

A typical situation is the case where a production engineer introduces a new piece of automated equipment to replace a number of old, antiquated bench-type single-station machines. Here is an actual quotation from the report on an unsuccessful project carried out by a production engineer:

Well, I’m really not sure what went wrong. I did all of the right things. For example, I ran a very detailed study of the feeds and speeds for eight weeks. I collected reams of data from all six of the old machines from both shifts. All of the data went into the computer, where it was pushed through a probabilistic model to establish a base me for the present process capabilities. Next, I studied the performance of all four of the top line automated machining centers on the market. I did a full capability study on paper and checked this out against the vendor’s qualification run. From all this, I wrote an appropriation request, presented it to management, and got approval to go ahead with the project. When the equipment came in, I set it up, trained the maintenance crew, ordered a spare parts package, turned it over to the production foreman, and now it just doesn’t seem to be working out the way I planned it.

The project was not successful. One important reason was that the project engineer made the fundamental error of concentrating on the technical aspects of the project to the detriment of other important aspects, such as the humanistic and social. Unfortunately, it is quite easy to “slide into” a basic error of this nature. In the day-to-day pressure of commitments and deadlines, the insidious forces of technological intensification tend to drive out awareness of the human element present in every new plant project. Nevertheless, worker attitudes, worker concerns, and worker involvement are key elements in the success or failure of most change-based advancements.

Fascination with new developments in technology, a desire to understand them, and an impulse to implement them are characteristic of the emerging profession of engineering technology. However, mature engineering technology practitioners practice a holistic approach to their craft. Such an approach includes a balanced treatment of all the elemental and environmental forces which can make project work fail or succeed.

One very powerful set of forces includes the socio-humanistic, or “people” aspects of a project. This has recently been receiving substantial attention from management scientists. Their writings and findings contain a number of insights which are valuable to engineering technology practitioners. Some of these new developments can be found within the newly-conceptualized areas of sociotechnical systems, open systems planning, quality control circle, and similarly

researched regions. A brief discussion of a few of these areas will show their scope and thrust.

Sociotechnical Systems

The sociotechnical systems approach was developed in England by Eric Tristof the Tavistock Institute and in the United States by Louis Davis of the Graduate School of Management at UCLA. This approach resulted from studies which were concerned with the social changes in work groups associated with the technological conversion from "single place" mining to "long wall mining" in British coal mines. According to T.G. Cummings and S. Srivastva, in Management of Work: A Sociotechnical Systems Approach, "the advent of newer forms of mining with mechanized shovels and picks and a conveyor method of transporting coal drastically altered the single-place tradition." The Tavistock group found that it was not possible to implement the newer long-wall coal mining technology without first addressing the complex social aspects which took place in the individual work crews assigned to operate the machinery. Furthermore, it was necessary actually to go beyond this and address the interactions between the work crews on each of the various shifts in order to make the newly-introduced technology become workable.

Open Systems Planning

Open systems planning was originally described by James V. Clark and Charles G. Krone in their article "Towards an Overall View of Organization Development in the Early Seventies," printed in Management of Change and Conflict. Open systems planning is a means of identifying and recognizing the "dynamic realities" of a workplace, such as a factory floor. It maps out how the present organizational system acts toward and values these realities. It also addresses the value-goals of the present organization toward these realities, including an assessment of the potential impact of change on these values. Finally, it makes plans to restructure the environment of the system in order to influence the realities of the environment in the desired direction. This approach is in sharp contrast to the abrupt manner in which many new technologies have been introduced into a stable manufacturing environment in the past.

Quality Control Circles

Quality control circles are an import from Japan. They were originally introduced there as a result of post-World War II statistical quality control activities by the American statisticians J. M. Juran and E. W. Deming. Basically, they have evolved into a technique for getting production workers directly involved in the day-to-day elements of problem solving relative to their workplace. This is important according to William Ouchi, author of Theory Z, because "involved workers are the key to increased productivity." Ouchi says that without involving the workers, there will be no increase in productivity. Worker involvement through the medium of quality circles mayalso be extended to the implementation of production engineering projects.

Other Viewpoints Useful to Project Engineers

It is always a useful experience for project engineers in industry to return to the original Western Electric Hawthorne plant experiments to regain an appreciation of the social and humanistic aspects of productivity-based project implementation. An excellent updated source is Man and Work in Society, which was published jointly by the Western Electric Company and the Harvard University

Graduate School of Management in 1975 upon the fiftieth anniversary of the original Hawthorne studies. In addition, the Worker's Control and Worker's Participation movements (described in Worker's Control: A Reader on Social Change, Random House) provide insights into workers' feelings and attitudes regarding externally induced changes which impact "their" workplace and workspace.

Summary

In 1960, C. P. Snow, the distinguished English novelist and writer, published his lecture on The Two Cultures and the Scientific Revolution. In this work he said that the world was becoming divided into dual camps, one of them characterized as being scientific and technological, and the other one characterized as nonscientific. The danger was developing that neither one would understand the other and that cultural barriers would arise which would cause new conflicts between these groups.

There is a lesson here for project engineers who wish successfully to implement technological projects. The intended project may be as small as a new drill press or as large as General Motors' troubled Lordstown, Ohio plant. Nevertheless, the project consists of two components: one of them is technological in nature, and the other is sociohumanistic.

Attempts to implement the project with serious attention given only to the technological aspects are limited and inadequate. Such an approach is handicapped from the outset and carries with it a strong bias in favor of project risk and potential failure. An approach which attempts to recognize and integrate the significant factors of the new technology, the worker and the workplace environment, will minimize risk of not succeeding.

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INDUSTRY'S UTILIZATION OF GRADUATES

Industry's Needs

Industry's needs for technical manpower require many types of personnel with various levels of technical competence. The particular mix of personnel depends upon the various functions to be performed in each industry. In the last 10 to 15 years changes which have occurred in industry, in its products, in its manufacturing facilities, and in its mode of operation, have resulted in corresponding changes in the types and mix of technical personnel that have been employed.

The various technical disciplines have seen various rates of change, and thus certain types of industries have changed more rapidly than others. The most obvious of these changes are related to the "era of the computer". Computer developments were recently identified as "having progressed as far as they have yet to go". Industry's buzz words today include microprocessor, minicomputer, programable controller, robotics, to name just a few. The dynamic changes in our technology are reflected in the changes in industry and directly impact on the performance requirements of the various members of the technical manpower team.

The increasing availability of baccalaureate engineering technology graduates has provided additional qualified technical personnel to help fill industry's expanding needs. Engineering and Engineering Technology graduates however are often found in similar entry-level positions as well as continuing in career paths which often overlap. This interface between engineering and engineering technology is often misunderstood and sometimes produces conflict and confusion in a profession which should be unified and working together to improve the productivity and performance of our industries.

There is an increasing number of companies throughout a wide range of industries who recognize the unique contribution which engineering technology graduates can make to their enterprise. The differences as well as the similarities between engineering and engineering technology must be understood.

More importantly the unique personal characteristics and motivation of each individual must be integrated into the performance evaluation process.

Industry's Job Functions

The spectrum of technical personnel on the engineering manpower team was first identified in the 1940's. That simple spectrum consisted of the scientist, the engineer, the technician, and the craftsman. Today however that spectrum has been expanded with an overlapping of responsibilities and classifications so that there is currently a continuum of job titles with no clearly defined or distinct separation among any of them.

An evaluation of job titles is usually misleading since job titles vary from company to company and from industry to industry and are often assigned for different reasons. Job titles may be the same or equivalent, yet the job descriptions might be uniquely different. Job descriptions should clearly relate to the specific job function to be performed in order that the individual so employed can be evaluated relative to the adequate performance of those functions. Most employers in seeking engineering and engineering technology

graduates for entry-level positions attempt to match the job function requirements to both the personality of the individual as well as to that individual's academic background.

A brief discussion of various technical job functions is helpful in understanding the wide range of employment of engineering and engineering related personnel in industry with both similar as well as different job titles.

The Relations-With-Industry Division of ASEE recognized this over 25 years ago and developed a guidance brochure titled

DESCRIPTION OF
Design - Manufacturing - Sales
ENGINEERING POSITIONS IN INDUSTRY
for the
GUIDANCE OF ENGINEERING STUDENTS

The emphasis in that bulletin identified more specifically the job functions associated with various job titles in use at that time. That general delineation is still valid today and allows us to identify three general functional areas which relate to technical jobs:

1. Idea oriented job functions
2. Thing or device oriented job functions
3. People oriented job functions.

The specific job description associated with various job titles will generally include elements of one or more of these job functions. The three functional areas relate to work in three corresponding categories:

1. Research, Design, and Development
2. Production and Manufacturing
3. Sales and Management.

Most engineering and engineering related positions include job functions which may include one or more of the following: management of the technical enterprise; theoretical studies and research; development of innovative ideas; production and manufacture of devices and systems; and application, maintenance, and servicing of those complex technical devices and systems.

Comparison of Education

The different job functions of the technical team members require a different educational background for each one. Typical base educational requirements are:

For Engineers -

A four year Bachelor of Science Degree in an Engineering field such as Electrical Engineering, Mechanical Engineering, etc.

For Engineering Technologists -

A four year Bachelor of Science Degree in a technical specialty such as Electrical Engineering Technology, Mechanical Engineering Technology, etc.

Frequently, a two-year Associate Degree in some technical specialty will form the first two years of a four year engineering technology education.

The different job functions typically performed by engineers and engineering technologists require differences in their educational programs. The different educational objectives and features of the Bachelor Degree programs in Engineering and Engineering Technology are revealed in Figure I.

Comparison of New Graduates

A comparison of the typical characteristics of new graduates of Four Year Engineering and Four Year Engineering Technology programs is shown in Figure II.

Entry Level Positions

Academic education constitutes a minimum of only 4 years out of a career lifetime of about 45 years. The collegiate experience is therefore the initial 9°Io or 10% of a person’s lifetime career. The personal traits, the individual’s unique characteristics and ability to perform, as well as the “opportunities and breaks,” govern the success and advancement of each individual during the remaining 90% to 91% of that lifetime career.

Engineers and Engineering Technologists perform job functions that are generally complementary. Since their education and interests are more similar than they are different, some overlap of job function does occur. Engineers usually seek employment in research and development, or systems analysis and design, or in engineering design. Engineering technologists are usually attracted to positions in applications design, or production and manufacturing, or field service, or in technical sales.

Historically entry into the engineering profession has been accomplished by individuals with a variety of educational backgrounds. There is a wider spectrum than is found in most other professions.

Engineering and engineering technology graduates enter the engineering profession in various entry-level positions and in those job functions which appeal to them and which match their personality traits and vocational interests. Their different educational backgrounds may allow for entry into the manpower spectrum at different levels and in different job functions. However in most industries there are many entry-level positions for which both engineering and engineering technology graduates may qualify. Exceptions obviously exist in basic research type job functions.

Industry’s search for entry-level personnel has brought it to careful consideration of both engineering and engineering technology graduates.

Many employers have job opportunities for which they seek either or both engineering and engineering technologist graduates.

It is in this interfacing of the two types of graduates in similar entry-level positions that the similarities of the graduates tend to mask their differences. It is important to remember that to be a true professional or to be legally certified as an engineer one must demonstrate not only knowledge, but also skill or “extensive responsible experience” in the application of that knowledge with judgment. It is in this latter category that the individual performance and resulting advancement of the two types of graduates often find them in similar career paths.

Career Advancement

Industry seeks predictable, productive performers. All members of the engineering manpower team are judged on the successful and skillful application of their technical knowledge. Career advancement and financial rewards are measured in large part on the ability to solve problems in a timely fashion, to get things done, to motivate people, and to effectively manage the technical enterprise. The personal motivation of individuals results in their moving within the engineering manpower spectrum of industry as they expand their knowledge,

develop mature judgment, improve their problem solving skills, and become adept at motivating and managing people.

Career growth beyond the entry-level position is dependent to a great extent on the personal performance of the individual. The interface between engineering and engineering technology graduates overlaps more as they advance beyond the beginning internship status. This is particularly evident in supervisory or management type job functions. Parallel progression allows both types of graduates to progress in their careers either by moving into management or supervision or by increasing capabilities within one’s technical field.

Engineering remains an open profession marked bya high degree of functional mobility for its members. Thus both engineering and engineering technology graduates move within the continuum of the engineering manpower spectrum seeking their own level of career achievements.

Some Examples

The Milwaukee School of Engineering in Fall 1979 and Spring 1980 conducted two independent surveys of engineering and engineering technology graduates. Graduates from the preceding five years were surveyed from the Electrical and Mechanical Departments. Although the surveys were not correlated and were conducted for other reasons, some comparative information is available.

Figures Ill and IV indicate current job functions, while Figures V and VI show most commonly encountered job titles; 87% of Mechanical Engineering Technology graduates were given titles which included “engineer”. There was less variation between job titles and functions in the Mechanical area than in the Electrical. The wide range of job titles indicated that employment of engineering and engineering technology graduates was generally more similar than different for the companies recruiting at MSOE.

Salary ranges for all Electrical Department graduates who have been employed for six months to five years are not significantly different.

Satisfaction with present job was questioned with: “To what extent does your present position relate to your career objectives?” There are some thoughts that the Electrical Engineering Technology graduates may feel they do not have the same opportunity for advancement that is available to the Engineers.

The involvement in continuing education is not too different than one might expect from formal continuing education in degree programs more popular with the engineering graduates. The area of further education (Figure X) and the Graduate Degree Program (Figure XI) seem to emphasize the more academic orientation of the engineer as well as the concern for more formal education for management.

Conclusions - Recommendations

The job functions in entry-level positions are being filled by both engineering and engineering technology graduates. An exception is found in the areas of research and development. The individual differences in people, in their performance, and motivation, and their uniquely different personalities can account for the differences between engineering and engineering technology graduates as well as the differences existing among engineering graduates or among engineering technology graduates.

Definitive conclusions are difficult to draw from the limited information available, It is obvious thatin times of demand for qualified technical personnel

graduates in similar entry-level positions. The graduates tend to be more similar than different when viewed by some industries. Some industries will employ primarily engineers, others will employ both engineers and engineering technologists, and some will employ primarily engineering technologists. There is a difference in employment policies of large and small companies.

A full scale comparative study of industry’s utilization of engineering and engineering technology graduates is recommended. The study should include various academic institutions and be conducted across various industries and employers. For too long we have deferred a careful evaluation of the utilization of the different members of our engineering manpower spectrum. The rapid changes in the body of our technical knowledge and the increasing use of technical personnel in new activities bear careful study. The guidance of both high-school and college students who have an interest in engineering or technically related matters is crucial to our industrial survival.

NOTE: A number of the items are taken from IEEE - “Report of the EAB Engineering Technology Study Committee” - January 5, 1980.
Further material is included in an unpublished guidance brochure currently in process in IEEE.

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Vice President
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Figure I

ACADEMIC PROGRAMS

Comparison Factor	Four Year Engineering Program	Four Year Engineering Technology Program
Program Emphasis	1. Emphasis on developing analytical solutions and alternatives for open-ended problems.	1. Emphasis on utilizing current application information and practices for specific technical problems.
Expertise Objective	2. Develops conceptual abilities.	2. Develops application abilities.
General Course Objective	3. "Engineering in Science Core" provides common language and a base of fundamentals required of all engineers.	3. Technical Specialty Core provides an extensive progressive sequence of specialty subjects focused in the technical disciplines.
Technical Courses Emphasis	4. Engineering courses stress underlying theory of subject matter	4. Technology courses stress application of technical knowledge and methods to current technical problems.
Laboratory Courses Emphasis	5. Emphasis in laboratory courses stresses an investigation of experimentation methods and learning about developing areas.	5. Emphasis in laboratory courses stresses practical design solutions and evaluation techniques for industrial type problems.
Technical Design Emphasis	6. General design principles are developed, applicable to a wide variety of problem situations.	6. Current design procedures of a complex but well established nature are developed applicable to a specialized technical area.
Graduate Education Opportunities	7. Graduate study in engineering as well as other areas is available for qualified students having a B.S. in engineering.	7. Graduate study in management or administration is available for qualified students having a B.S. in engineering technology.

Figure II

CHARACTERISTICS OF NEW GRADUATES

Comparison Factor	New Engineering Graduate	New Four Year Engineering Technology Graduate
Technical Interest	1. Engineering graduate is relatively broad; has an analytical, creative mind challenged by open-ended technical problems.	1. Technology graduate is relatively specialized; has an applications orientation that is challenged by specific technical problems.
Technical Capability	2. Engineers use basic knowledge of materials, forces, energy, physical and chemical behavior to develop products and services beneficial to humankind.	2. Technologist utilizes a knowledge of technical sciences and applied physical sciences to produce services beneficial to humankind.
Technical Practices	3. Engineer develops new procedures to advance the state-of-the-art.	3. Technologist applies established procedures utilizing current state-of-the-art.
Typical Beginning Job Aspirations	4. The BSE entering industry would most likely aspire to an entry level position in conceptual design, systems engineering, or product research and development.	4. The BSET entering industry would most likely aspire to an entry level position in product design, product development, technical operations, or technical services and sales.
Adaptability to Current Industrial Practices	5. Upon graduation, an engineer typically requires a period of "internship" since the engineering program stresses basic fundamentals.	5. Upon graduation, technologists may be ready to begin technical assignments immediately since the technology program stresses relatively current industrial practices and design procedures.
Average Starting Salary	(About the same for both, Engineering slightly higher)	

Figure III

Job Function - Electrical

	Electrical Engineering	Electrical Engineering Technology
Design	36%	38%
Supervision	21%	15%
Technical Sales	9%	20%
Field Engineering	7%	13%
Research	6%	2%
Development	4%	2%
Test/Evaluation	4%	8%
Analytical Analysis	3%	0%
Manufacturing Control	3%	2%
Manufacturing Planning	3%	0%
Other	1%	0%

Figure V

Commonly Encountered Titles - Electrical

	Electrical Engineering	Electrical Engineering Technology
Design Engineer	25%	10%
Electrical Engineer	18%	20%
Project Engineer	14%	20%
Sales Engineer	11%	8%
Application Engineer	7%	1%
Senior Engineer	5%	17%
Field Engineer	5%	9%
Test Engineer	5%	4%
Branch Manager	5%	2%
Associate Engineer	2%	4%
Software Engineer	2%	4%

Figure IV

Job Function - Mechanical

	Mechanical* Engineering	Mechanical Engineering* Technology
Design	44%	32%
Supervision	24%	31%
Technical Sales	10%	10%
Field Engineering	21%	18%
Research	18%	8%
Development	35%	14%
Test-Evaluation	37%	30%
Analytical Analysis	26%	14%
Manufacturing Control	6%	8%
Manufacturing Planning	6%	5%
Other	0%	0%

*Multiple Functions Reported.

Figure VI

Commonly Encountered Titles - Mechanical

Note: 87% of Mechanical Engineering Technology graduates carried job titles which included "engineer". Most common titles included Project Engineer and Design Engineer.

Note: Comparative information for Mechanical Engineering graduates not available in useful form.

Figure VII

Salary Ranges - Electrical

	Electrical Engineering	Electrical Engineering Technology
15 - 20,000	31%	13%
20 - 25,000	42%	46%
25 - 30,000	10%	15%
30 - 35,000	4%	4%
35 - 40,000	2%	2%
40 - 45,000	2%	2%
45 - 50,000	0%	1%
above 50,000	1%	0%
no response	8%	17%

Figure VIII

Satisfaction with Job

	Elec Engrg	Elec Engrg Tech	Mech Engrg	Mech Engrg Tech
0 to 25%	10%	8%	9%	11%
25 to 75%	44%	47%	56%	52%
75 to 100%	44%	29%	35%	37%
no response	2%	16%	---	---

Figure IX

Involvement in Continuing Education

	Electrical Engineering	Electrical Engineering Technology
To no extent	20%	13%
Short courses	50%	58%
Degree program	30%	22%
Other	0%	7%

Figure X

Area of Continuing Education Study - Electrical

	Electrical Engineering	Electrical Engineering Technology
Engineering or Technology	52%	50%
Science	1%	0%
Management	21%	2%
no response/other	26%	48%

Figure XI

Graduate Degree Program - Electrical

	Electrical Engineering*	Electrical Engineering Technology**
MS undesignated	0%	1%
MS Computer Science	3%	2%
MS EE	21%	6%
MBA	14%	6%
MS Engineering Mgnt.	3%	1%
MS other	2%	2%
Ph.D.	0%	1%

*Includes dual degree selections.

**Does not include second BS in Mechanical Engineering Technology.

TECHNICIANS AND TECHNOLOGISTS — AN UPDATE* —

Starting salaries paid to associate degree graduates of engineering technology programs averaged $1371 per month in 1981 while bachelor of technology graduates earned an average of $1672 per month, according to the Engineering Manpower Commission's Placement of Engineering and Technology Graduates, 1981. Thus, technologist graduates earned about $300 per month more than technician graduates. This difference is down from $400 in 1980.

Average starting salaries for technician graduates increased by 24.1 percent from 1980 to 1981, while those of technologist graduates increased by 11.1 percent over the same period (see Table 1). Both of these increases are larger than for 1980, although the recent trend of larger increases by associate degree graduates has continued at an accelerated rate. Therefore, while technologist starting salaries exceeded those of technician graduates by 36 percent in 1980, this figure was reduced to 22 percent in 1981. The starting salaries of both groups exceeded the increase in the Consumer Price Index, which rose by 10.7 percent over the period. This reverses the situation in 1980 when both fell behind the rise in the Consumer Price Index.

TABLE 1

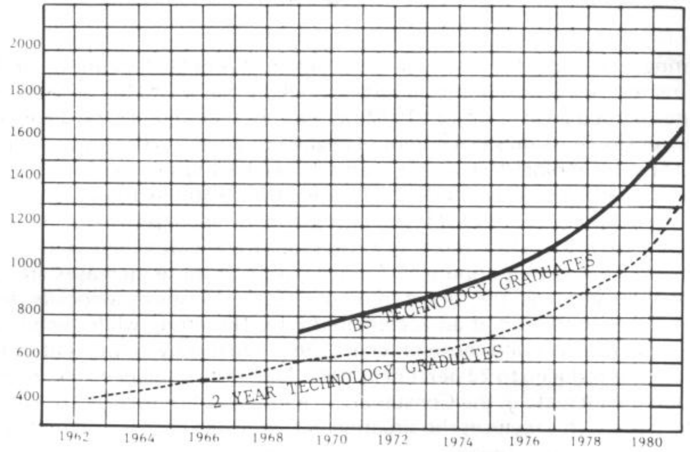
AVERAGE MONTHLY STARTING SALARIES OF TECHNOLOGY GRADUATES

1980 - 1981

	1981	1980	Percent Increase
Technology Graduates			
AS	$ 1371	$ 1105	24.1
BS	1672	1505	11.1
Consumer Price Index (July)	274.4	247.8	10.7

Sources: Technology starting salaries from the Engineering Manpower Commission placement survey. Consumer Price Index from Monthly Labor Review, U.S. Department of Labor.

FIGURE 1
Average Monthly Starting Salaries Offered to Technology Graduates 1963-1981



JOB MARKET CONTINUES FAVORABLE FOR TECHNOLOGY GRADUATES

The Engineering Manpower Commission placement survey, cited above, shows that the job market for graduates of technology programs remains good. In the case of the two-year associate degree graduates, 83 percent had firm plans as of their graduation date. This includes 25 percent who were continuing full-time study, but excludes 4 percent who were still considering job offers. Thirteen percent had no job offers and had no plans. This is up from 10 percent in 1980. Eighty-one percent of the four-year technology graduates had made commitments as of graduation, including 3 percent who planned to continue their studies full-time. In addition, a sizeable 8 percent were still considering job offers while 11 percent had no job offers or plans, up from 9 percent in 1980. A summary of the 1981 placement survey is given in Table 2. Both groups had larger proportions who had no offers or plans than in the previous year indicating increased selectivity in making offers by prospective employers. The increase in the number of four-year graduates still considering offers, from 1 percent in 1980 to 8 percent in 1981, shows that larger numbers of the graduates are receiving multiple offers for consideration.

TABLE 2

PLACEMENT OF TECHNOLOGY GRADUATES — 1981

	Two-Year Associate	Four-Year Bachelor's
Newly Employed Returning to Job	55%	76%
Full-Time Study	25	3
Considering Job Offers	4	8
Other	3	2
No Job Offers or Plans	13	11

Engineering Technology and Industrial Technology Degrees

The most recent survey of technology degrees by the Engineering Manpower Commission is reported in Tables 3 and 4. Table 3 shows the data by state, school and degree level, while Table 4 gives the survey results by curriculum area and level. More than 16,500 engineering technology degrees at the associate level are reported for 1981 and more than 8,400 at the bachelor's level. Although more than 200 schools reported their degrees in this survey, the majority of which have one or more ABET (formerly ECPD) accredited programs, the data do not represent a true total for the U.S. because a sizeable number of schools without ABET accredited programs is not included. Five states produced about 55 percent of the associate degrees in engineering technology - New York, Ohio, Florida, Massachusetts, and Pennsylvania - while these five and five more - Texas, California, Illinois, Indiana, and Arizona - produced about 58 percent of the bachelor degrees in engineering technology. Byfar, the largest numberof degrees in engineering technology is awarded in electronics and electrical disciplines, followed by mechanical and manufacturing, and civil and construction technology areas. The number of computer and electromechanical associate degrees appears to have risen sharply over the previous survey. The number of engineering science and pre-engineering associate degrees is down from last year to less than 1,500 and is listed separately so as not to confuse them with technology degrees.

I n excess of 7,000 industrial technology associate degrees are reported as well as more than 3,000 at the bachelor's level. The bachelor degrees are concentrated mainly in five states -Illinois, Michigan, Texas, Missouri, and Indiana - which produced 70 percent of the total. However, only Texas and Illinois from the previous list are among the top ten states producing associate degrees in industrial technology - the others being New York, Oregon, North Dakota, Pennsylvania, Utah, North Carolina, Tennessee, and New jersey. At the associate degree level, the largest curricular areas are electronics and electrical, computer and electromechanical, and automotive, while the great majority of BS degrees are in the undesignated area of industrial technology.

Dr. Stanley M. Brodsky Member, Engineering Manpower Commission Professor New York City Technical College of the City University of New York

*The reports from which the data is this article have been excerpted are available from the Engineering Manpower Commission, 345 East 47th Street, New York, N.Y. 10017.

Table 3. Technology Degrees by School and Degree Level, 1981

	Engineering Technology			Industrial Technology			
State and School	Cert.	ASET	BSET	Cert.	ASIT	BSIT	MSIT
Alabama			23				
Alabama A&M			149				20
Jefferson JC		26					
Reid State Tech		27					
ALABAMA		53	172				20
Arkansas Little Rk		8	13				
ARKANSAS		8	13				
Arizona State			80			71	2
DeVry Phoenix		277	205				
Glendale CC		11			39		
No. Arizona			40				
Phoenix		31					
Pima CC				52	130		
ARIZONA		319	325	52	169	71	2
Cal Poly State SLO			110			34	
Cal State Poly Pom			154				
Cal State Sacramnto			65				
Cal Maritime			46			60	
City College San Fr		52			20		
Cogswell		49	71				
Diablo Valley		27			15		
Merced		9			41		
Northrop		45					
Pacific Union					12	2	
CALIFORNIA		182	446		88	96	
Colorado Tech		99	36				
Mesa Colorado		22					
Metropolitan State		20	49				
Southern Colorado		48	99			7	
COLORADO		189	184			7	
Connecticut U			9				
Greatr New Haven TC	9	25		4	9		
Hartford State TC		194					
Norwalk State TC		138					
Thames Val State TC		104			70		
Ward TC Hartford		76	24				
Waterbury State TC		105		9	82		
CONNECTICUT	9	642	33	13	161		
Delaware Tech Wilm		151					
DELAWARE		151					
C.P.S.E&T U.D.C.	22	90	14				
DISTRICT OF COLUMBIA	22	90	14				
Broward CC No.					74		
Central Fla U			96				
Embry-Riddle			16				
Florida			2				
Florida A&M			34				
Florida Inst Tech JB					14	24	
Florida Internatl			144			165	6
Hillsborough		22					
Miami-Dade No.		412					
Miami-Dade So.		349					
New College			51				
No. Fla U						38	
Okaloosa Walton		21					
Palm Beach JC					19		
So. Fla U			42				
St Petersburg JC		187					
Tampa Tech Inst		565					
FLORIDA		1556	385		107	227	6
Berry						7	
DeVry Atlanta		57	18				
Fort Valley State			6				
Georgia Southern			36			34	
Savannah State			33				
Southern Tech		105	265				
South Georgia					2		
GEORGIA		162	358		2	41	

Table 3. Technology Degrees by School and Degree Level, 1981.

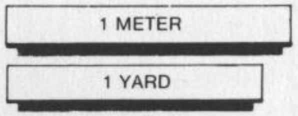
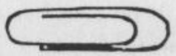
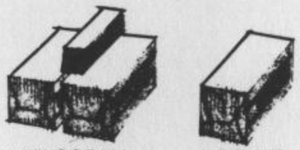
	Engineering Technology			Industrial Technology			
State and School	Cert.	ASET	BSET	Cert.	ASIT	BSIT	MSIT
Idaho State	149						
Ricks		67					
IDAHO	149	67					
Belleville		10			79		
Bradley			95				
DeVry Chicago		254	184				
Eastern Illinois						30	
Illinois State						160	
Morrison		85					
Oakton CC		10					
Parkland		10					
Parks St L		30	3				
Richland CC					17		
Rock Valley					108		
So. Ill Carbondale			151			594	
Thorton CC					38		
Triton		33			76		
Western Illinois						49	4
ILLINOIS		432	433		318	833	4
Indiana State						179	
Indiana St Evansvl		16	15				
Purdue-W Lafayette		268	189				
Purdue-Calumet		130	99				
Purdue-Ft Wayne		76	55				
Purdue-Indianapolis		119	65		123	57	
Purdue-No. Central		14					
INDIANA		623	423		123	236	
Clinton CC					25		
Hawkeye Inst		57					
Iowa Western		8			44		
Kirkwood CC		29					
Northern Iowa						57	
Northern Iowa Area					39		
Southwestern Iowa		8					
Western Iowa		70					
IOWA		172			108	57	
Johnson City		18			1		
Kansas Tech		88	47				
Pittsburg State U			48			122	
Schweiter Tech		20					
Wichita			14				
KANSAS		126	109		1	122	
Lexington TI		52					
Louisville		73					
Western Kentucky			46		7	34	
KENTUCKY		125	46		7	34	
Delgado		113					
Louisiana Tech		63	41				
LSU Baton Rouge			14				
LSU Eunice					1		
Southern		4	43				
LOUISIANA		180	98		1		
East Maine Voc-Tech		5			62		
Maine		90	49				
MAINE		95	49		62		
Capitol Inst		27	89				
Maryland			25				
Montgomery		34					
Prince Georges		109					
MARYLAND		170	114				
Blue Hills Tech					93		
Bristol CC		48		12			
Cape Cod CC		5					
Central New England		134	69				
Franklin Inst		66					
Greenfield CC		17					
Lincoln Northeastrn		89	87				
Lowell		30	45		1	40	
Mt Wachusett		28					
North Shore CC					44		
Quinsigamond CC		23					
Roxbury CC		21					

Table 3. Technology Degrees by School and Degree Level, 1981.

State and School	Engineering Technology Cert.	ASET	BSET		Industrial Technology Cert.	ASIT	BSIT	MSIT
Delta		58			36	52		
Eastern Michigan							30	
Jackson CC		7				21		
Kellogg CC		20						
Kirkland CC					22	43		
Lake Superior		54	38				6	
Lawrence Tech		56						
Michigan Tech		134						
Monroe Co. CC						24		
Northern Michigan						5	20	
Northwestern Mich		32				99		
Oakland CC		9				50		
Saginaw Valley			27					
Schoolcraft		38			32	94		
Southwestern Mich		6				58		
St Clair Co. CC					3	26		
Wayne City CC						18		
Wayne State U			40					
Western Michigan			123	23			14	
MICHIGAN		414	228	23	93	490	70	
Anoka Ramsey CC		42						
Mankato State							53	
Moorhead State							20	
North Hennepin		4						
Northwestern Ele Inst						166		
Rochester CC		36						
Southwest State		4	30					
MINNESOTA		86	30			166	73	
Coahoma JC						4		
Copiah Lincoln						21		
Hinds JC						33		
Jackson State							32	
Jones City JC						49		
Meridian JC						11		
Mississippi State							6	
Northwest Miss JC						25		
Southern Miss			15				32	
MISSISSIPPI			15			143	70	
Central Mo. State						38	147	
Jefferson		9				59		
Longview CC		30						
Missouri Inst Tech		72	83					
Missouri Western St		8	23					
Northeast Mo. State							48	
Northwest Mo. State					8		17	
Southeast Mo. State						17		
Southwest Mo. State						2	111	
St Louis CC-For Park	11	50						
St Louis CC-Flor Val	20	55				3		
MISSOURI	31	224	106		8	119	323	
Montana State			70					
Northern Montana						73	18	
MONTANA			70			73	18	
Kearney State							10	
Nebraska Omaha		42	43				7	
Western Nebr Tech						55		
NEBRASKA		42	43			55	17	
Nevada		16						
NEVADA		16						
Alamance		20				23		
Anson Tech						8		
Beaufort Tech						2		
Blue Ridge Tech		10				8		
Cape Fear						92		
Central Carolina		46						
Coastal Carolina		9						
Coll Albemarle		14						
Davidson Cty		5						
Durham Tech		16				10		

THINK METRIC

Following are the few metric units of measurement that will be used in our everyday lives and their approximate sizes. Those for time and electricity are the same units with which you are already familiar.

METRIC UNIT	APPROXIMATE SIZE OF UNIT	COMPARATIVE SIZES
(Length)		
millimeter	Diameter of a paper clip wire	•
centimeter	A little more than the width of a paper clip (about 0.4 inches)	
meter	A little longer than a yard (about 1.1 yards)	
kilometer	Somewhat farther than ½ mile (about 0.6 mile)	
(Weight)		
gram	A little more than the weight of a paper clip	
kilogram	A little more than 2 pounds (about 2.2 pounds)	 1 KILOGRAM 1 POUND
metric ton	A little more than a short ton (about 2200 pounds)	
(Volume)		
milliliter	Five of them make a teaspoon	
liter	A little larger than a quart (about 1.06 quarts)	1 LITER  1 QUART
(Area)		
hectare	About 2.5 acres	
(Pressure)		
kilopascal	Atmospheric pressure is about 100 kilopascals=29.5 inches of Hg (14.5 psi)	
(Temperature)	°C: −40, −20, 0, 20, 37, 60, 80, 100 °F: −40, 0, 32, 80, 98.6, 160, 212 ↑ water freezes (0 °C / 32 °F); ↑ body temperature (37 °C / 98.6 °F); ↑ water boils (100 °C / 212 °F)	

On the occasion of the testimonial dinner in your honor,
the faculty of Bronx Community College
greets you

Professor Frederick J. Berger

We Honor you for over twenty years of dedicated service as an educator a
engineering - scientist.

We honor you for your administrative leadership as chairman of the Departn
Engineering Technologies and vice-chairman of the Accreditation Board for Engineer
Technologies, Region III.

We honor you for your time and effort inside and outside the classroom for th
intellectual and character development of students.

We honor you ~~for your~~ significant contribution to the curricula ~~of the~~ electrical and mechc
engineering technologies and to the design and maintenance of their laboratories and equipment.

We honor you for your generosity in donating your talents and skills in the interest of the college

We honor you for your dependability evidenced in a perfect attendance record.

We honor you for your guidance as sponsor of and adviser to the Beta Delta Chapt
of Tau Alpha Pi, for establishing its scholarship medallion, and for your position as
executive director of the honor society.

We honor you for your promotion of the professional status of the engineering techno
through teaching, counseling, writing, editing the Tau Alpha Pi *Journal*, and ABET/ECPD accredit

We honor you as the recipient of over thirty-five awards in recognition of
distinguished service to the college, faculty, and students.

Therefore, on this 31st day of May, 1981, we gratefully bestow upon you this merited citation.

faculty representatives

president

CODE OF ETHICS OF ENGINEERS

THE FUNDAMENTAL PRINCIPLES

Engineers uphold and advance the integrity, honor and dignity of the engineering profession by:

I. using their knowledge and skill for the enhancement of human welfare;

II. being honest and impartial, and serving with fidelity the public, their employers and clients;

III. striving to increase the competence and prestige of the engineering profession; and

IV. supporting the professional and technical societies of their disciplines.

THE FUNDAMENTAL CANONS

1. Engineers shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.

2. Engineers shall perform services only in the areas of their competence.

3. Engineers shall issue public statements only in an objective and truthful manner.

4. Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest.

5. Engineers shall build their professional reputation on the merit of their services and shall not compete unfairly with others.

6. Engineers shall act in such a manner as to uphold and enhance the honor, integrity and dignity of the profession.

7. Engineers shall continue their professional development throughout their careers and shall provide opportunities for the professional development of those engineers under their supervision.

Approved by the Board of Directors, October 5, 1977

Table 3. Technology Degrees by School and Degree Level, 1981

	Engineering Technology				Industrial Technology			
State and School	Cert.	ASET	BSET	MSET	Cert.	ASIT	BSIT	MSIT
Lenoir CC		15				7		
Martin Tech						7		
No. Carolina A&T							53	
No. Car-Charlotte			90					
Pitt Tech		40						
Randolph Tech		8						
Richmond Tech		6						
Rowan Tech		40						
Sandhills		17						
Vance Granville						24		
Wake Tech		57						
Western Carolina			4				48	
Western Piedmont		14						
Wilkes CC					28	34		
Wilson Cty Tech		21				16		
NORTH CAROLINA		505	94		28	264	101	
Lake Regional JC						12		
North Dakota							24	
No. Dak St Sch Sci						392		
NORTH DAKOTA						404	24	
New Hampshire			15					
New Hamp Tech Inst		84						
New Hamp Voc-Tech						120		
NEW HAMPSHIRE		84	15			120		
Atlantic CC		20						
Cumberland						8		
County Coll Morris					12	192		
Fairleigh Dick-Teank			90					
Kean							39	
Mercer Cty CC		35				24		
Middlesex Cty Coll		140				3		
New Jersey Tech	30		115					
Ocean Cty		34						
Trenton State			103					
Union College		106						
NEW JERSEY	30	335	308		12	227	39	
Navajo CC		2						
New Mexico		15						
New Mexico State		43	40					
NEW MEXICO		60	40					
Acad Aero		160				130		
Bronx CC		56						
Broome CC		136				3		
City Coll NY			30					
Corning CC		113						
Erie CC		370						
Hudson Valley CC		270				139		
Mohawk Valley CC		116				92		
Monroe CC		272						
Nassau CC		110						
Niagara Cty CC		83						
N Y City Tech Coll		149				138		
N Y Inst Tech-NY			94					
N Y Inst Tech-Old W			103					
Orange Cty CC			56					
Paul Smith's						33		
Queensborough CC		289						
Rochester Tech		31	246			11		
SUNY A&T Alfred		353				297		
SUNY A&T Canton		149				23		
SUNY A&T Farmingdale		455						
SUNY A&T Morrisville		65						
SUNY Binghamton			48					
SUNY Buffalo			61				67	
SUNY Utica-Rome			48					
Tech Career Inst		68						
Westchester CC		139			33			
NEW YORK		3440	630		33	866	67	

Table 3. Technology Degrees by School and Degree Level, 1981

State and School	Engineering Technology Cert.	ASET	BSET	MSET	Industrial Technology Cert.	ASIT	BSIT	MSIT
Akron		155	61					
Belmont Tech		38			108			
Cincinnati Tech		186						
Clark Tech		66						
Columbus Tech	29	85			110	74		
Cuyahoga CC		78						
Dayton		4	109					
Edison State		19						
Franklin	1	20	28					
Jefferson Cty		57						
Kent State		93						
Kent St-Ashtabula		22						
Kent St-Trumbul		56						
Kent St-Tuscarawas		23						
Lima Tech		43						
Lorian Cty CC		65						
Miami		36	182					
Muskingum ATC		68						
Ohio U							15	
Ohio Applied Sci		122	67			9		
Ohio Inst Tech		212	177					
Owens Tech		76						
Shawnee State		40						
Sinclair CC		65						
Stark Tech		104						
Toledo		117	65					
Washington Tech	14	40			1	2		
Youngstown		134	63					
OHIO	44	2024	752		219	85	15	
Cameron						37		
Northeastern A&M		40				97		
Northeastern Okla St							30	5
Oklahoma State		118	223					
Oklahoma St Tech Okmu		225				299		
OKLAHOMA		383	223			433	30	5
Blue Mountain CC		29						
Linn-Denton CC		33						
Oregon Inst Tech		134	102			102	25	
Oregon State			42					
Umpqua CC		17			11			
OREGON		213	144		11	102	25	
Gannon U Erie			7				10	
Harrisburg CC	4	52			3	11		
Lehigh Cty CC		9			8	130		
Northampton Cty		9				50		
Penn State		852						
Penn State Capitol			194					
Penn Tech						205		
Pitt Johnstown			127					
Pitt Titusville		4						
Spring Garden		41	113					
Temple		18	132					
PENNSYLVANIA	4	985	573		11	396	10	
Rhode Is College							11	
Rhode Is JC		23						
Roger Williams Coll		69	96					
RHODE ISLAND		92	96				11	
Clemson			50					
Denmark Tech		54						
Florence Darlington		32						
Francis Marion			3					
Greenville Inst		108						
Midlands Tech		72						
Orangeburg Calh		10						
Piedmont Tech		19				52		
Spartenburg Tech		28				4		
Sumter Tech		9						
Tri-County Tech		43				62		
Trident Tech		54						
York Tech		47				21		
SOUTH CAROLINA		476	53			139		

Table 3. Technology Degrees by School and Degree Level, 1981

State and School	Engineering Technology Cert.	ASET	BSET	MSET	Industrial Technology Cert.	ASIT	BSIT	MSIT
Lake Tech						110		
Mitchell Tech	220							
So. Dak Springfield		135	29					
So. Dakota State		15						
SOUTH DAKOTA	220	150	29			110		
Austin Peay State							22	
Chattanooga State		60						
Cleveland State CC						85		
Columbia State CC		7			41	22		
Dyersburg CC						4		
East Tenn State		21	76					9
Knoxville Tech		150						
Memphis State			103			123		
Memphis Tech		142						
Middle Tenn							20	6
Motlow State		18						
Nashville Tech		172						
Roane State CC		20						
Tennessee Martin			16					
Tri-Cities State		111						
TENNESSEE		701	195		41	234	42	15
Amarillo		41						
Bee County					25	24		
Dallas Cty CC		14				167		
Del Mar		14						
DeVry Dallas		71	63					
Houston			217				213	
Houston-Downtown			10					
Le Tourneau		50	68					
San Antonio		125						
Texas A&M			185				132	8
Texas St Tech Waco		29			651	737		
Texas Tech			81					
TEXAS		344	624		676	928	345	8
Brigham Young		8	99	7			29	
Utah Tech						143		
Utah Tech Salt Lk City					109	214		
Weber State		12	106					
UTAH		20	205	7	109	357	29	
Blue Ridge CC		18						
Ferrum						6		
John Tyler		33				6		
Lord Fairfax		15						
Norfolk State						6	47	
Old Dominion			94					
Southwest Va CC		66						
Tidewater CC					43	118		
Virginia Poly Inst			44					
Virginia Western CC		48						
Western Shore		4						
Wytheville CC		24						
VIRGINIA		208	138		43	136	47	
Norwich			17					
Vermont Tech		181						
VERMONT		181	17					
Washington State							7	
Yakima Valley		5						
WASHINGTON		5					7	
Milwaukee Sch Engrg		312	120					
Moraine Park						77		
No. Central Tech						113		
Wisconsin Platteville							61	
WISCONSIN		312	120			190	61	
Bluefield State		63	43					
Fairmont State		32	75					
Parkersburg		7			2	18		
West Va. Tech		125	40					
WEST VIRGINIA		227	158		2	18		

Table 4. Technology Degrees by Curriculum and Level, 1981.

	Engineering Technology				Industrial Technology			
State and School	Cert.	ASET	BSET	MSET	Cert.	ASIT	BSIT	MSIT
Air Conditioning	22	247	88		102	241		
Aircraft		409	137		161	395	104	
Architectural	30	804	119		30	333	72	
Automotive	27	312	24		311	720	97	
Chemical		311	16			34		
Civil	13	1209	753			123		
Construction & Structural	3	575	518		93	385	199	
Computer	85	1444	148		36	844	23	
Drafting, Design, Graphics	31	754	125		102	687	82	
Electrical	101	2299	1323		107	546	56	
Electromechanical	12	462	199		10	154	2	
Electronic	85	3741	1856		121	1362	161	2
General		216	502	3		15	14	
Manufacturing, Industrial	9	671	681	27	93	451	2116	42
Marine			46			25	60	
Materials, Metallurgical	30	49	25		112	95	3	
Mechanical	27	2392	1530		32	398	53	
Mining, Minerals, Petrol	8	264	126			2	24	
Nuclear		11	6			6		
Other	26	334	247		161	477	120	16
Sub-Total	509	16504	8469	30	1471	7293	3186	60
Engineering Sci, Pre-Engrg		1471				47	2	
Total	509	17975	8469	30	1471	7340	3188	60
No. Of Schools Reporting	11	234	115	2	25	115	54	8

Chapter News

ALPHA ALPHA (Southern Tech): The chapter presented a large plaque of the Tau Alpha P1 emblem to the library. A showcase will be used with the emblem to help increase the chapter's visibility on campus. Future plans call for the preparation of a graduate resume' book that can be forwarded to prospective employers. Officers: Mike Cobb (President); Lance Caine (Vice-President); Tommy Nowell (Secretary); Jack Braden (Treasurer).

ALPHA BETA (DeVry Institute of Technology, Atlanta): The chapter sponsored the Presidential Honors Banquet to recognize students for outstanding achievement. Chapter members, in addition, ushered at graduation, sold raffles to raise funds, and participated in social functions. The chapter

plans to continue these activities. Because of their very special efforts, the chapter thanked its past officers: Jeff Hyson, Randy Traylor, and Carey Christensen. Present Officers:
George Northam (President); David Good (Vice-President); John Waddell (Secretary-Treasurer).

BETA GAMMA (Queensborough Community College, City University of New York):
The chapter has continued its tutoring assistance in electrical, mechanical, and pre-engineering disciplines, and it now includes tutoring in computer technology.
Officers: Margareth Lopez (President); Suzanne M. Clay (Vice-President).

BETA DELTA (Bronx Community College, City University of New York): Chapter members have continued to assist in tutoring other students and in ushering at commencement exercises. They participated also in the silver anniversary events at the college by sponsoring a guest speaker on April 29 and holding an exhibit of interest to students of engineering science and technologies. Initiations of newly elected members and a luncheon reception in their honor were held on December 17,1981, and on March 18,1982. At the June commencement, the Dr. Morris Meister medallion in recognition of outstanding scholarship was awarded to Rehan Basham, and the scholarship in the name of Prof. FrederickJ. Berger was presented to Donald Felder. Future plans include the designing of a replica of the Tau Alpha P1 key to be constructed on the campus. Officers: Joel Popelsky (President); N evil le Morris (Vice-President); Courtney Lackard (Secretary); Juan Larrazabal (Treasurer).

BETA IOTA (Rochester Institute of Technology): The primary campus activity of the chapter is to provide educational assistance to students in the engineering technology programs. Officers: Richard C. Giraulo II (President); Gary Lee Plymette (Vice-President); Wayne B. Pickering (Secretary-Treasurer); Pierra A. Loncle (Public Relations).

BETA KAPPA (SUNY College of Technology, Utica-Rome): The chapter held initiation ceremonies on April 22, 1981. Members have continued to serve Project SITE (Student Introduction to Engineering), the purpose of which is to inform high-school students about engineering and engineering-technology career opportunities. Officers: Robert Quinn (President); Steven J. Henk (VicePresident); Gregg Wagner (Secretary); Thomas A. Hughes (Treasurer).

BETA KAPPA

1St Row: Robert Quinn, Gregg Wagner, Sylvain Lacroix, Benjamin J. **Steele, Jr.;**
2nd Row: Thomas A. Hughes III, Nicholas Cenci, Steve J. Henk, Anthony Chabarek

BETA MU (Canton Agricultural and Technical College, New York): The chapter was officially chartered on April 24, 1981, and charter members were initiated. Professor Frederick J. Berger attended and delivered the keynote address. On December 8, 1981, initiation ceremonies were held for newly elected members, and officers of the chapter were elected. Future activities include sponsoring one or two speakers on topics of concern to students of engineering and engineering technologies. Officers: Richard Rozanski (President); Kent Pellegrino (Vice-President); Larry Myers (Secretary); Jon Kennedy (Treasurer).
___~1
1 rst row (I. to r.): Rock Nadeau, Prof. Richard W. Miller, Advisor, Dr. Earl McArthur, President of Canton ATC, Frederick J. Berger, John Tyo, Henry Van Wie
2nd row (I. to r.): Tom Lamb, Chris Ford, James Hyde, Nicholas G. Kollar, James Jacobson

BETA EPSILON (Hudson Valley Community College): Chapter members have provided a tutorial service for students in the various curricula. The response to this service has been very positive. Plans call for a social get-together and for investigating the possibility of electing an honorary member. Officers: James F. McLaughlin (President); Douglas B. Park (Vice-President); Janet Cuerrin (Secretary); Laureen McLaughlin (Public Relations).

BETA NU (New York Institute of Technology): The chapter held chartering and first initiation ceremonies inducting thirteen members on April 2, 1982. Professor Frederick J. Berger was the keynote speaker. Dr. Lillian Gottesman (Beta Delta Chapter) assisted in the ceremonies. Officers: Joel Weiner (President); Richard Heilweil (Vice-President); Richard Horton (Secretary-Treasurer).

GAMMA ALPHA (College of Applied Science, University of Cincinnati): Gamma Alpha was re-established on May 28, 1981. Among its planned activities are the organization of tutoring services and the establishment of counseling for freshmen. The chapter will also attempt to seek out and extend membership to alumni who merited election to the society but were deprived of it because of the chapter's inactive status. Officers. Medardo M. Martinez (President); Kevin E. O'Connell (Vice-President); Mark R. Gillming (Secretary); Joseph A. KnoChelman (Treasurer).
GAMMA BETA (University of Dayton): In addition to holding initiation ceremonies, the chapter has sponsored fund-raising activities. It plans to purchase a Tau Alpha Pi key, cast in brass, which will be displayed in front of the Engineering building in order to promote the visibility of Tau Alpha Pi. Officers: David L Jacoboski (President); Daniel Harmeyer (Vice-President and Treasurer); John Buehrle (Secretary); Robert Gerung (Public Relations).

Members: Seated (left to right) Julie A. Stigler, James O'Bryan Wilma J. Kressin, Barbara J.
Hamburg, Dara B. Harris.
Standing - Medardo Martinez, Kevin P. George, Joseph A. Knochelman, David M. Brooks, Mary
Kay Moore, David C. Banahowski, Frances M. Ubel, Kevin E. O'Connell, Mark R.

Gillming, Steve
J. Mazza, Michael D. Velikoff, Dean John C. Spille. (Not pictured Kimberly A. Davisson.

GAMMA EPSILON (Ohio Institute of Technology): The chapter co-sponsored the seventh Annual Presidential Honors Banquet to recognize students who achieved a 3.5 or higher index. It also set up a display case containing plaques with members' names in yearly sequence and a plaque with the society's purpose. The chapter plans to improve its communications with the student body in order to better inform students about the society and its goals. Officers: Calvin D. Gilbert (President); Billy Overstreet (Vice-President); Thomas Hancock (Secretary); Enrico Vagliente (Treasurer).

GAMMA UPSILON (Cuyahoga Community College, Cleveland, Ohio): Chapter members constructed a booth that measures about 8' x 8' x 4' in order to display the four areas of engineering technologies offered at Cuyahoga: architectural-construction, electrical-electronics, manufacturing/industrial, and mechanical. The booth was part of the display during National Engineers Week at Cleveland Engineering and Scientific Center, February 24-25, 1982, and it was used also for recruiting purposes by the college. In addition, chapter members served as hosts at professional meetings and as tutors and guides. Officers: Michael J. Gleeson (President); Anthony Cydzik (Vice-President); Kenneth Zaremba (Secretary-Treasurer).

Display booth during National Engineers Week at the Cleveland Engineering and Scientific Center, February 24-25-, 1982

DELTA ALPHA (Wentworth Institute of Technology): In October, February, and April the chapter sponsored the Red Cross Bloodmobile on campus, and 350 pints of blood were contributed. In December the chapter raised funds for the area orphanage known as the Home for Little Wanderers. In addition, chapter members served as guides and hosts for the President's guests at the annual open house. They also continued their tutoring program for students who need academic help. These activities have been ongoing and will continue to provide meaningful contributions to the college and community. In these activities, the chapter has implemented the principles of Tau Alpha Pi. Officers: Patricia Schmitz (President); Steven Hurley (Vice-President); John LalIy (Secretary); David Hosley (Treasurer).

EPSILON ALPHA (Missouri Institute of Technology): Initiation ceremonies were held on August 13, 1981, and elections for new officers took place on March 3, 1982. The chapter acquired a reproduction of the Tau Alpha Pi emblem, three feet in diameter, to be displayed in the Technology building and used in future initiations. Future plans include the re-writing of the chapter constitution, the acquisition of a chapter banner, and the display of the chapter in a conspicuous location in order to give the chapter greater visibility. On April 13, 1982, the chapter was privileged to have Professor Frederick j. Berger present as a guest. At this time he presented the chapter's president with the engraved charter that it plans to display. Among the future activities, also, are the initiation of the faculty adviser Professor Richard A. Bain and the induction of President C.R. Le Valley as an honorary member. Officers: G. Scott Wooge (President); Richard A. Varner (Vice-President); Robert F. Jones (Secretary-Treasurer).

Front row (left to right): J. Coffman, B. Pho, S. Wooge, C. Knudson, M. Jones, T. Morrow; Back row: M. Wade, W. McKinney, R. Varner, R. Jones, S. Pehl; Not shown: M. Pobursky, J. McCanless

UPSILON BETA (Arizona State University): The chapter held its initiation and banquet on February 27, 1982. Among its activities during the current year were fund-raising, a social gathering, and the designing of Tau Alpha P1 stationery. Future plans include the casting and manufacture of a large replica of the key to be placed on the lawn in front of the Technology building. Such display will make the society more visible. Other planned activities include tutoring and plant tours. Officers: Sharon Gorham (President); Bill Morgan (Vice-President); Marjorie S. Laninga (Secretary-Treasurer).

UPSILON DELTA (DeVry Institute of Technology): In addition to holding initiations, the chapter has continued to assist in commencement exercises. On January 29, 1982, Professor Frederick J. Berger attended initiation ceremonies and was the keynote speaker. Dean Joseph Patton Hendricks was selected for honorary membership. In February, 1982, a banquet was held for the members. The chapter is also initiating a system of storing its secretarial and treasurer's

information on floppy disk and establishing files to keep alumni on permanent file. The alumni will be invited to speak to present members-in-course and provide information on the working careers of engineering technologists. Future plans call for the sale of polo and tee shirts bearing the Tau Alpha Pi emblem.
Officers: John Jacoby (President); Gerald Dysetter (Vice-President); Kim T. Lancaster (Secretary); Wade Schoot (Treasurer).

ZETA ALPHA (College of Technology, University of Houston). In addition to holding initiation of eight new members and election of officers, the chapter sponsored a “Job Interviewing” seminar during which instructors from the Job Placement Service at the university talked on the preparing for a job interview and the interviewing process. At the end of the spring semester, two awards were presented to two faculty, one full-timer and one part-timer, elected by the students for their outstanding work. The chapter noted that it is proud to have as college dean, Lawrence J. Wolf, and associate dean, Carl P. Houston — both Tau Alpha Pi members. Officers: James T. Duncan (President); James Sharp (Vice-President); Allen Spence (Secretary).

ZETA BETA (College of Staten Island, City University of New York): The chapter has continued to sponsor guest speakers from industries such as Bell Labs, IBM, Exxon, Con Edison, Loral, Grumman, General Electric, and Tektronix for the benefit of engineering and engineering technology students. Induction ceremonies for new members were held on May 12, 1981, and on December 15, 1981.
Officers: Elaine Smith-Pinsker (President); George Bertolotti (Vice-President); Anthony J. DiPilato (Secretary); Andrew A. Gingo (Treasurer).

ZETA DELTA (Texas Tech University): The chapter conducted a tutoring service for technology students and an opinion survey of the program among junior and senior students. The results of the survey were presented to the departments’ industrial advisory board which consists of members associated with industry in the electrical, mechanical, or construction field. Officers: David V. Seaman (President); Andrew B. Wallace (Vice-President); Neal E. Blackketter (Secretary).
Front row seated (left to right): A. Dr. C.E. Teske, Dr. Elbert Reynolds, Dr. Don Helmers, Mr. A.J.
Sanger; (not pictured): Dr. Fred P. Wagner, Jr., Dr. Larry Masten; Members (left to right): John Garey, Van
Braswell, Richard Campbell, Roy Blankenship, David Miller, Ron Hall, Chris Ghormley, John DeLasus,
Donavan David, Mark Converse, Jay Lewis, Gary Ragle, Wallace Hohmann, David Hightower, Joe Garcia,
Steve Orr, Dennis Littlefield, Mike Schmidt, Vice-Chairman Andy Wallace, Sec. Treas. Neal Blackketter,
Chairman David Seaman; (not pictured): Vicki **Durbin, Eddie Hankins, Bruce Jones, John Knight, Neal Payne,**
Ron Richards.


dvisors:

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ETA BETA (University of North Carolina at Charlotte): The chapter plans to sponsor an auto emissions test at no cost to the motorist. The chapter gratefully acknowledges the receipt of a $100 contribution from General Electric. Officers:
Gregory E. Chappell (President); Patrick K. Lynch (Vice-President); Mary R. Dixon (Secretary); lrv Erickson (Treasurer).

LAMDA ALPHA (Norwalk State Technical College):The chapter held its initiation and banquet in the spring of 1981. The college's president Dr. William M. Krummel was guest speaker. The chapter has continued to offer its successful tutoring services and will, in addition, sponsor an open house for high-school students. It will also institute a program for student evaluation of faculty. Officers: Steve Pine (President); Eric Gausch (Vice-President); John Moore (Secretary), James Clarizio (Treasurer).

NU BETA (Clemson University): The chapter held initiation ceremonies. Members continue to serve the society and the university. Officers: Brian J. Kauer (President); Henry W. Andrews (Secretary-Treasurer).

NU ALPHA (Lake Land College): The chapter initiated seven members and one honorary member on March 18, 1982. A banquet followed the initiation ceremony. Officers: Kevin Van Voorhis (President); Kenneth D. James (Vice-President); James F. Holland (Secretary); Steven K. Kopplin (Treasurer).

NU BETA (Southern Illinois University at Carbondale): Nu Beta, a newly established chapter, held chartering and initiation ceremonies on May 5, 1982. Seven students and two alumni of Carbondale's College of Engineering and Technology were named charter members. Nu Beta was the first Tau Alpha Pi chapter to be established at a senior institution in Illinois. The university's President Albert Somit was chapter guest at the ceremonies. Professor Paul F. Bennett (Engineering Technology, Indiana State-Evansville) and Professor Carl H. Dietz (Engineering Technology, St. Louis Community College-Florissant Valley) presided at the instairation. Officers: Sandy J. Sherman (President); Brian D. Pendleton (Vice-President); Anne E. Gaylord (Secretary); Bradley A. Wilson (Treasurer).

Xl BETA (Northrop University): The chapter held initiation ceremonies on February 18, 1982.

Mr. Larry Grapo, past president of the chapter, presided, assisted by Hui Ting Low and Wijono Tjajadi. Xl Beta elected to membership students who not only achieved a cumulative average to place them in the highest 4°/ of the total engineering technology enrollment and displayed high character and leadership traits, but also received the recommendations of at least two faculty members. On March 9, 1982, the new initiates were recognized at a dinner meeting held in conjunction with the Society of Engineering Technologists. The highlight of the evening was the address by Mr. Gene Du Bill, Vice-President in charge of production at the McDonnell Douglas Aircraft Company. Officers:
Thomas Walters (President); Otto Ojong (Vice-President); Kevin O'Hara (Secretary).

OMICRON BETA (Union County Technical Institute): The chapter held initiation at a breakfast ceremony on April 22, 1982. Dr. John H. Carmichael, President of Union County Technical Institute, was inducted as an honorary member, and he addressed the group. The dean of technologies Cynthia Niv, a member of the chapter, participated in the ceremony and addressed the new members. As part

of their service to the Institute, chapter members serve as ushers at commencement and will continue to do so. As of July 1,1982, the Union County Technical Institute in Scotch Plains and Union College in Cranford are scheduled to merge into a new institution to be called Union County College. Officers: Ruth A. Fetske (President); Anthony J. Varvar (Vice-President); Walter J. Wludyka (Secretary-Treasurer).

OMICRON EPSILON (Middlesex County College): The chapter held its chartering and first initiation ceremonies on April 23, 1982. Thirteen students were inducted. Professor Frederick J. Berger delivered the keynote address and assisted in the ceremonies. Future plans include visits to technical industries to learn about new technologies. Officers: Richard P. Garrett (President); James T. Gallo (Vice-President); Betsy R. Schwartz (Secretary); Robert P. Lyons (Treasurer).

P1 GAMMA (Purdue University at Fort Wayne): The chapter inducted new members whose names will be inscribed on an honor scroll that will be placed in the Engineering office. Future plans include a meeting of all the Purdue Tau Alpha Pi chapters to discuss goals and activities, the publication of a directory of all members, and the publishing of a newsletter to be sent to alumni members.
Officers: Linnette Wise (President); Jim Stout (Vice-President); Rod Wilson (Secretary).

P1 ALPHA (Purdue University): One of the agenda items of Pi Alpha chapter was the issuance of a congratulatory message to Professor Frederick J. Berger for his excellent presentation of an award to Dr. Steve Cheshier on the occasion of Dr. Cheshier's inauguration as President of Southern Technical Institute (Marietta, Georgia). Dr. Cheshier was cited for founding and fostering the Pi Alpha Chapter at Purdue. Officers: Alan Miner (President); Russell Boutell (Vice-President); Garry Grzelak (Secretary-Treasurer).

RHO ALPHA (Colorado Technical College): The chapter held initiation of new members and a dinner in their honor. The members plan to have a tutoring program. Officers: Bob Tompson (President); Steve Mueller (Vice-President); David Fein (Secretary-Treasurer).

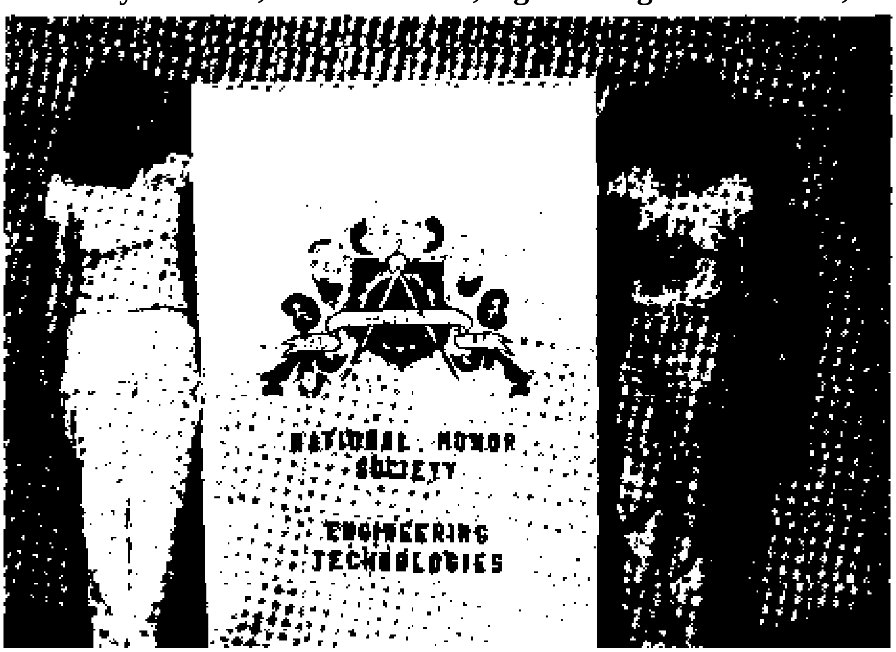
RHO BETA (University of Southern Colorado): The chapter conducted fund-raising activities. It held its spring initiation-banquet and invited a guest speaker on Robotics from Denver, Colorado. Officers: Gregory A. Phillips (President); Peter Psaras (Vice-President); Walter Fry (Secretary-Treasurer).

RHO GAMMA (Metropolitan State College, Denver, Colorado): On May12, 1982 the chapter held initiation ceremonies and banquet attended by over eighty guests. The speaker was Dr. George Löf, internationally recognized expert on solar energy. Officers: Steve C. David (President); Ed Anderson (Vice-President); Clayton Ritchey (Secretary-Treasurer).

SIGMA BETA (University of Central Florida): In addition to electing and initiating new members, the chapter on December 10,1981 adopted a resolution calling for the College of Engineering at UCF to introduce a master's degree program in engineering technology. The members plan to have a tutoring program and will volunteer time to help other students who need assistance in their engineering-technology studies. Officers. Vance E. Morse (President); Frank J. Sammer (Vice- President); James R. Reaser (Secretary -Treasurer).

SIGMA GAMMA (St. Petersburg Junior College): The chapter has continued its tutoring program, fund raising, and participation in campus activities. The chapter also wished to have a Tau Alpha Pi banner. Upon inquiry into costs and discovering them to be at least $350, two officers of the chapter, Mary Jo Hurd and Margaret H. Storm, made the banner which is shown in the picture below.
Officers: Dean Fryer (President); Mary Jo Hurd (Vice-President); Margaret H. Storm (Secretary-Treasurer).

Left Mary Jo Hurd, Vice President; right: Margaret H. Storm, Secretary-Treasurer.



CHI BETA (Norwich University): The chapter was chartered on April 29,1981. On April 30 it held chartering and initiation ceremonies. President James P. Todd of Vermont Technical College (Chi Alpha) initiated six students and two faculty. At its March 29, 1982 initiation ceremony, Chi Beta was again honored to have representation from Chi Alpha. During the academic year, the two chapters held a joint meeting. Officers: Kim Bryant (President); Albert Fagan (Secretary-Treasurer).

PSI DELTA (State Technical Institute): The chapter inducted newly elected members in the spring of 1982. Members participated in Career Day and High School Tour Day. Plans include offering a tutoring service, assistance in registration activities, and help to instructors in the laboratories. Officers: Jeff Miller (President); Candace Betson (Vice-President); Patrick Riddle (Secretary-Treasurer).

ALPHA ALABAMA (University of Alabama): The chapter held induction ceremonies on October 2, 1981. Among the initiates was Acting Dean William J. Hatcher, Jr., who was elected to honorary membership. Officers: Tony Sheffield (President); Jim Barnes (Vice-President); Larry Reid (Secretary-Treasurer).

1st row: Tony Sheffield, President; 2nd row (left to right): Larry Reid, Secretary-Treasurer, Jim Barnes, Vice President; 3rd row (left to right): Frankie Upchurch, Bill Famming, Tom Brantley and Ken Shaw

ALPHA KANSAS (Kansas State University): The chapter had its chartering and first initiation ceremonies on April 13, 1982. At the banquet, Dean Donald Rathbone and Professor Frederick J. Berger delivered informative and inspiring talks. Kansas State University has been the "first" in the state in many educational undertakings, and it was the first in Kansas to establish a chapter of Tau Alpha Pi. Professor Berger presented the engraved charter to the chapter's faculty advisers Professors Margaret A. Yeage andJohn C. Lindholm. Officers: Kelly R.Jones (President); Dan Leroy Willits (Vice-President); Brad Gorsuch (Secretary); Jon Scott Lynch (Treasurer).

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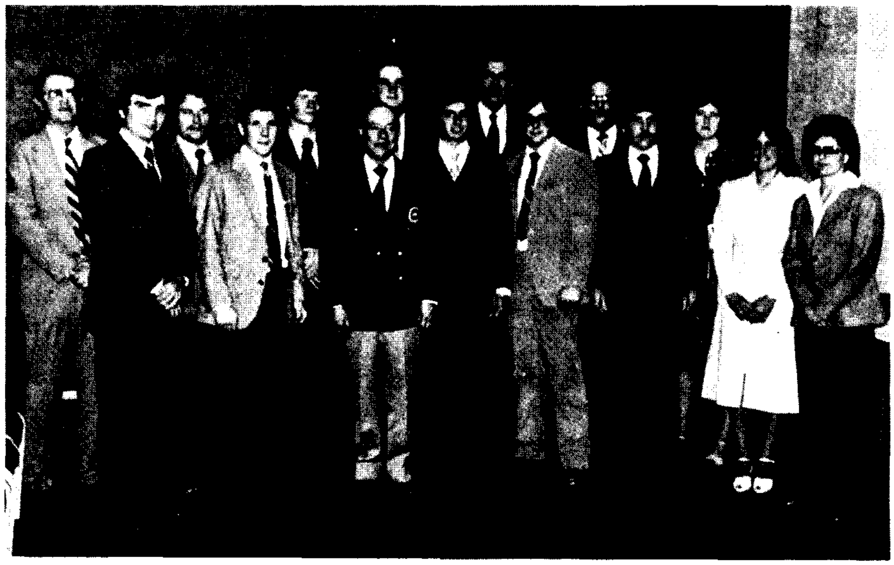
Left to right: Donald E. Rathbone, James N. Barth, Steven L. Fernkopf, J. Scott Lynch, Dan L. Willits, Frederick Berger, Jon H. Jacobson Jr., Brad E. Gorsuch, John C. Lindholm,

Doyle L. Slack, Kelly R. Jones, Timothy M. Holub, Margaret A. Yaeger, Pamela G. Kohler, Kimberly R. Gerard.



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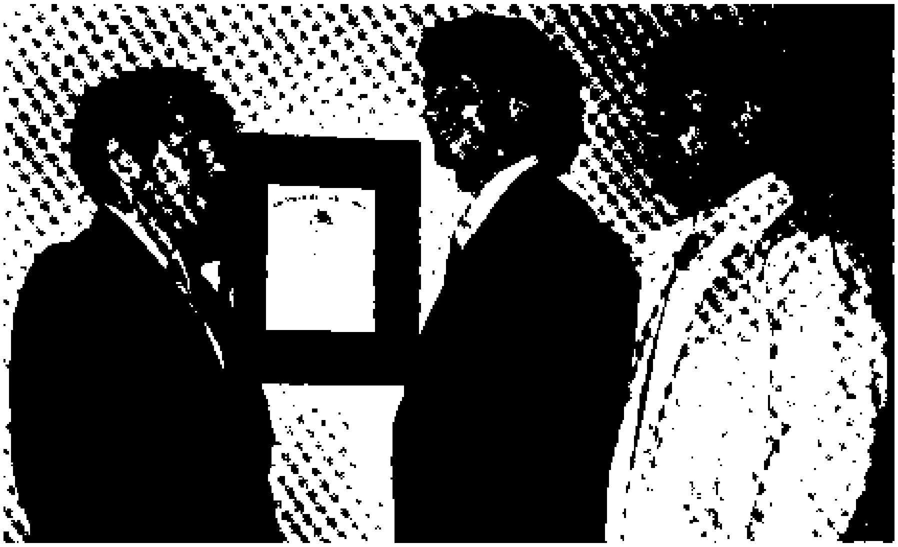
ALPHA LOUISIANA (Louisiana Tech University): During 1981-1982 the chapter initiated five students. One of these initiates, Clifford Sartin, a student in construction technology, was selected by the Merit Shop Foundation Board of Trustees as the recipient of the James S. Long Memorial Scholarship—a $750 award. Officers: Andrew Benjamin (President); Scott McElroy (Vice-President); Todd Zaumbrechen (Secretary); Steve Flower (Treasurer).

ALPHA OKLAHOMA (Oklahoma State University): On October 25, 1981, the chapter initiated nineteen new members and held a banquet in their honor. The keynote address delivered by the Technology Student Services Director implored the members to provide tutoring for students in need of academic help. In Mayof 1981, the chapter named John C. Scheihing, assistant professor of mechanical design and manufacturing technology, the Outstanding Faculty Member of the Year. Officers: Danny Blakely (President); Robert Olivas (Secretary-Treasurer); Shawn Thompson (Publicity); Kevin Trosper (Membership).

Prof. John C. Scheihing receives congratulations as the" Outstanding Faculty Member of the Year" from David Porter and Craig Robinson.



ALPHA WISCONSIN (Milwaukee School of Engineering): On January 27, 1982, the chapter initiated eleven new members who were honored at a banquet on March 1 3. Officers: Randy A. Poss (President); James Hoeflich (Secretary-Treasurer); Ron L. Miller (Activities Director).

BETA LOUISIANA CHAPTER
Chartered April 15, 1982, Nicholls State University: Professor Charles J. Monier, Sponsor.

Charter Members

Matthew J. Lawless	Dennis John Ledet	Douglas Joseph Baney
Robert H. Schoen	Michael Paul Cavalier	Edward A. Becnel

ALPHA WASHINGTON CHAPTER
Chartered June 4, 1982, Cogswell College North: Dr. Ronald Pars, Sponsor. Charter Members

Jerry Blanchard	Clifford 0. Chapin II	Calvin C. Chui
Jeffrey W. Dean	Charles T. Donovan	Douglas C. Drake
J. William Mains	Donald D. McBride	Donald F. Paggeot
Tony Peterson	David W. Plumley	Donald Stickles

Request For Publication
The publication committee of Tau Alpha Pi is interested in receiving articles on Engineering Technology for possible publication in the Tau Alpha Pi Journal. Individuals who have articles or ideas on Engineering Technology which they feel would be of interest to other Engineering Technology educators and students should call or send two copies of their work to: Professor **Frederick J. Berger, Editor, Tau Alpha** Pi **Journal, P.O. Box 266, Riverdale, New York 10471, Telephone:**

212-884-4162.

Papers on new and innovative programs, the employment picture, utilization of technology graduates, instructional innovations, and book reviews will be given priority.

Please pass this request on to other colleagues at your campus so that they too may participate in furthering the professional status of the Engineering Technology students and the profession.

Parts of the Journal will be going to the printer during the first week of April. We need the articles and your news to insure that your chapter's activities will be included and given national recognition when the Journal is published.

If pictures are to included, they should be black and white on glossy paper.

Collegiate Chapters of Tau Alpha Pi National Honor Society for Engineering Technology

BETA THETA CHAPTER

Broome Community College
Binghamton, N.Y. 13902
Prof. Robert L. Reid

BETA IOTA CHAPTER

Rochester Institute of Technology
One Lamb Memorial Drive
Rochester, New York 14623
Prof. Robert McGrath, Jr.

BETA KAPPA CHAPTER

State University of New York
College of Technology
811 Court Street
Utica, New York 13502
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