From the Desk of
MARVIN A. NEEDLER
Electrical Technology
Indiana-Purdue
Indianapolis Campus

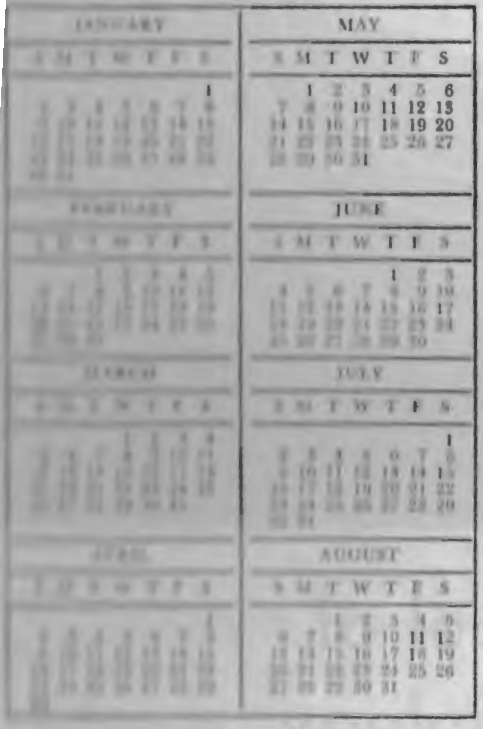
School of Technology

ANNOUNCEMENTS 1971-72

University Calendar

1971

1972



First Semester

September 15
Classes begin
November 23
Thanksgiving vacation begins
November 29
Classes resume
December 22
Christmas vacation begins
January 5
Classes resume
January 15
Classes end and reading period begins
January 18
Final exams begin
January 26
Semester ends

Second Semester

February 7
Classes begin
April 1
Spring vacation begins
April 10
Classes resume
May 27
Classes end and reading period begins
May 30
Final exams begin
June 7
Semester ends
June 11
Commencement

Summer Session, 1972

June 19
Classes begin
July 4
Holiday
August 8
Classes end and reading period begins
August 9
Final exams begin
August 11
Session ends

PURDUE UNIVERSITY BULLETIN

December 6, 1970 Number 6

[illegible] paid at Lafayette, Indiana. Issued by Purdue University 22 times a year: [illegible] each in January, February, and December; twice in March, April, May, June; [illegible] July, August, September, October, and November.

School of Technology

Announcements for the Year 1971-72

Calumet Campus
Indiana-Purdue
Campus at
Fort Wayne
Indiana-Purdue
Campus at
Indianapolis
North Central Campus
Lafayette Campus

PUBLISHED BY THE UNIVERSITY
LAFAYETTE, INDIANA

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About Purdue University

THE YEAR 1971 marks 102 years of growth and progress for Purdue University. From an institution of six instructors and 39 students, Purdue, Indiana's land-grant college, has grown to a major university with a faculty of 2,200 and a student body of more than 37,000 on five campuses.

One hundred and twenty major buildings now compose a Lafayette campus which once boasted of three structures. From the Lafayette campus, the University has expanded to four regional campuses, at Hammond, Fort Wayne, Indianapolis, and Westville.

The Purdue story began with the signing of the Morrill Act by President Abraham Lincoln on July 2, 1862. By this act, the federal government offered to turn over public lands to any state which would use the proceeds to establish and maintain a college to teach the agricultural and mechanical arts.

Three years after passage of the land-grant act, the General Assembly of Indiana voted to take advantage of the act and begin plans for such a college. Competition from various communities in the state ended when the assembly in 1869 voted to accept $200,000 and 180 acres of land from John Purdue and other Tippecanoe County citizens. It was in appreciation of this gift that the legislature of Indiana voted to name the new college Purdue University.

The main campus at Lafayette has grown to 485 acres. Nearly 13,500 acres in the state are under University control; most of this land is used for agricultural research.

Purdue ranks 16th in size among the 2,100 U. S. colleges and universities and is one of the 41 leading institutions with membership in the Association of American Universities. For more than a quarter of a century, the University has been largest or second largest in undergraduate engineering enrollment in America.

In accordance with a long-standing policy of the Board of Trustees, all educational services and programs of the University are available and open to all academically qualified individuals without any discrimination whatsoever with respect to race, creed, or national origin.

The University is the cultural and recreational center for northwestern Indiana. During the past several years, more than 90,000 people annually have attended conferences and short courses on the Purdue campus. Special facilities for student and conference activities are found in the Purdue Memorial Center and Memorial Union. Additional thousands come to Purdue attractions ranging from ballets and concerts in the 6,080-seat Edward C. Elliott Hall of Music to Big Ten football in Ross-Ade stadium.

Purdue's reputation as one of the country's outstanding universities is affirmed by the success attained by its over 100,000 alumni.

But, the Purdue story is not told in numbers alone. It is a story of leadership and influence in almost every academic field offered by the University. Instruction is offered by ten different schools, including:

School of Agriculture. Instruction is offered in agricultural science, agricultural business, and agricultural production. More than 10,000 acres of farmland serve as laboratories for research and instruction. Campus laboratories supplement classroom instruction.

Schools of Engineering. Students in these schools choose from curricula in 11 major areas of engineering, ranging from agricultural engineering to nuclear engineering. One out of every 20 engineers in the United States holds a degree from Purdue.

School of Home Economics. With more than 1,000 students, this is one of the largest schools of home economics in the nation. The school is considered outstanding in preparing men and women for professional work in fashion retailing, restaurant management, housing, and dietetics, as well as teaching. The school also offers a two-year associate degree program in food service and lodging supervision.

School of Humanities, Social Science, and Education. Essentially all of the traditional disciplines of the liberal arts are offered by the school. Majors and minors are available in all 14 of the school's departments, and some 125 separate areas of specialization exist from which the student may choose to prepare himself in the humanities, the social sciences, or in education.

School of Industrial Management. The school offers a broad general education, with major understanding of all basic areas of management, bridged to the technological skills of engineering, statistics, and computer sciences.

School of Pharmacy and Pharmacal Sciences. Today, many of the prominent pharmacists and pharmaceutical scientists in Indiana and the nation are Purdue graduates. Students who expect to apply for admission to this school first take one year of the School of Science's prepharmacy option.

School of Science. More students are enrolled in science courses at Purdue than at any other American university. Its research accomplishments and leadership in revitalizing curricula in the sciences have brought wide acclaim.

School of Technology. The Technology School was created in 1964 to provide educational opportunity for Indiana high school graduates whose technological interests and aptitudes have not previously been adequately served. In addition to the two-year degree of Associate in Applied Science, the school also awards the regular baccalaureate and graduate degrees.

School of Veterinary Science and Medicine. The only school in the state and one of only 18 in the United States empowered to grant the Doctor of Veterinary Medicine degree it graduated its first class in 1963.

Graduate School. All programs of graduate study and research leading to advanced degrees come under the jurisdiction of this school. This includes programs of study leading to the degrees of Doctor of Philosophy, Education Specialist, Master of Science, Master of Arts, and Master of Science in the various professional fields. Graduate study in management and economics are offered by the Krannert Graduate School of Industrial Administration.

School of Technology

ORGANIZATION AND PURPOSE

THE SCHOOL OF TECHNOLOGY is primarily concerned with three major types of activities: (1) the education of nurses and technicians; (2) baccalaureate programs for the education of technologists, constructors, industrial supervisors, professional pilots, registered nurses, and technologists; and (3) baccalaureate studies for the preparation of teachers of industrial education and other technical fields. All graduate work is carried on in cooperation with the Graduate School.

On July 1, 1964, the School of Technology became the ninth school at Purdue University. The School of Technology conducts its various curricula on a linear education plan keyed to the economic and industrial needs of not only the individual but also the state. These college-level programs, whether two-year unit plus two-year unit, four-year, or graduate, are offered to students on the basis of needs and time available for the individual's educational goals.

The activities of the School of Technology take place in each of Purdue University's five campuses. These are located for the most part in the more heavily industrialized and populous areas of Indiana. They are listed on page 10. All campuses are first rate in terms of their faculty and facility.

Purpose. To prepare individuals for various positions or lines of activity encompassed within the professional fields and usually to serve as support personnel for professionals.

Emphasis. Principles and fundamentals are stressed to a degree necessary to develop proficiency in the use of rational processes in approaching solutions to problems.

Scope. The subject matter lies between that required to train craftsmen and professionals. It, nevertheless, touches both these levels in that it contains a degree of both the practical and the theoretical.

Degree Awarded. The two-year associate degree is commonly awarded to persons who successfully complete the curricula.

Continuing Opportunity. Most graduates of the two-year curricula may continue toward a baccalaureate. The type of program to be pursued varies greatly and is influenced by the nature of the associate degree completed, the availability of programs within a college or university, and transferability of associate degree credit either within or between institutions. Bacculaureate opportunities at Purdue University for associate degree graduates are described elsewhere in this catalog.

ECPD Accreditation. In June of 1969 the Engineer's Council for Professional Development certified accreditation to four existing technology curricula: the two-year Associate in Applied Science degree curriculum in electrical engineering technology, the two-year Associate in Applied Science degree curriculum in mechanical engineering technology, the four-year Bachelor of Science degree curriculum in electrical technology, and the four-year Bachelor of Science degree curriculum in mechanical technology. The accreditation applies to the day programs at the Lafayette campus.

ADMISSION

REQUIREMENTS FOR ADMISSION

STUDENTS MAY be admitted to the School of Technology as (1) regular students or (2) temporary students. A regular student, upon satisfactory completion of a prescribed curriculum, may be awarded the appropriate degree. Temporary students are not eligible for the award of a degree.

For admission to the freshman class, one must be a high school graduate and present a minimum of 15 units of credit in high school work. A unit represents the study of any subject with five recitation periods a week for a school year. The record must include:

	Minimum
English	3 units
History or social studies	1 unit
Algebra	1 unit
Plane geometry	1 unit
Laboratory science	1 unit
*Additional English, language, mathematics, science, or social studies	3 units
Other high school subjects	5 units
	15 units

College Board Examinations Required

All beginning students are required to take the C.E.E.B. Scholastic Aptitude Test and achievement tests in English, mathematics, and chemistry. A student who has not had or is not taking chemistry may substitute the test for the science area which he has studied. It is recommended that the SAT be taken in the spring of the junior year (results from tests taken at other dates are acceptable) and that the achievement tests be taken in the spring of the senior year. The tests should be taken even though the admissions application has already been filed.

Indiana residents applying for admission to the School of Technology are expected to rank in the upper two-thirds of their graduating class and to make reasonable scores on the College Entrance Examination Board tests. A marginal applicant may:

1. Be granted unconditional admission;
2. Be admitted on probation; or
3. Have his admission postponed or denied.

Out-of-State Applicants

Purdue is a publicly-supported institution of the state of Indiana, and, therefore, it must give preference to the admission of well-qualified applicants

* Mathematics—A student whose program requires MA 150 and who does not qualify for 150 as indicated by the placement tests in algebra and trigonometry and high school grades will be assigned to MA 111 as a prerequisite for 150. Thus it is strongly urged that he complete MA 111, or equivalent, in the summer session preceding entrance into full-time study. Otherwise, the student may require five semesters to complete his program.

from Indiana. In addition to meeting the subject matter requirements already described, out-of-state applicants *to be eligible for consideration* must meet the following qualifications:

1. Out-of-state beginners must rank in the highest quarter (25 percent) of their high school graduating class or rank in the highest quarter (25 percent) based on the Purdue distribution on the SAT section of College Entrance Examination Board tests.
2. Transfer applicants must have an average grade of B in work done at previously attended colleges.

From these applications, the out-of-state roster will be selected; the number will be determined by the space available.

No out-of-state application will be considered or even processed unless it is accompanied by the required $20 out-of-state application fee. This fee is not refundable and may not be applied to fees, tuition, or housing.

Transfer Students

An applicant transferring from another college or university must follow the procedures set forth below:

1. Submit an application for admission on the prescribed form through the director of guidance of the high school from which he was graduated.
2. File the application for admission when he begins his last semester or term at the college he is currently attending.
3. Forward an official transcript of work done in institutions previously attended. A separate transcript must be sent directly from each institution, regardless of whether credit is requested.
4. Request that the dean of men/dean of women of each institution previously attended complete and forward to the Office of Admissions a personal report. (The appropriate form will be mailed to the student upon receipt of his application.)
5. Nonresidents pay the $20 out-of-state application fee.

Indiana residents must have at least an average grade of C and out-of-state applicants must have an average grade of B for all courses previously taken at a recognized college or university to be eligible for consideration. Transfer students must be in good academic, social, and disciplinary standing at the college (colleges) previously attended.

Nondegree Students

A mature person, who is a local resident and who desires to avail himself of the instruction offered in any of the departments of the University without undertaking one of the regular plans of study and without becoming a candidate for a degree, may be admitted as a nondegree student. An applicant must give evidence of prerequisite backgrounds for the course or courses for which he is applying.

PROCEDURE FOR MAKING APPLICATION

All inquiries regarding admission to the Lafayette campus should be

addressed to: Director of Admissions, Purdue University, Lafayette, Indiana 47907. The first letter of inquiry concerning admission should include:

1. The amount of school training completed;
2. Plans for further education, indicating field of specialization;
3. The approximate date to enter Purdue;
4. A request for information concerning admission requirements; and
5. A request for application form.

A personal visit to a University campus for a conference with an admission counselor is always desirable and helps a prospective student evaluate his preparation and plans for further education. It also affords an opportunity to give additional information and explanations that apply to an individual case. Such a visit and conference are especially appropriate at the beginning of or during the junior year in high school.

Students who wish to begin their university studies at one of the other University campuses should consult the admissions officer at the respective campus instead of writing to the Lafayette campus. Other campus addresses are listed below:

Admissions Office
Indiana University—Purdue University, Fort Wayne Campus
2101 Coliseum Boulevard East
Fort Wayne, Indiana 46805

Admissions Office
Indiana University—Purdue University, Indianapolis Campus
1201 East 38th Street
Indianapolis, Indiana 46205

Admissions Office
Purdue University, North Central Campus
Junction of Indiana Toll Road and U.S. 421
Westville, Indiana 46391

Admissions Office
Purdue University, Calumet Campus
2233 171st Street
Hammond, Indiana 46323

The Application

The application for admissions must be made on the official form provided by the University. The applicant and his family should complete the necessary sections of the application for admission and then submit it to his high school director of guidance who should complete the remainder of the form. The high school forwards the entire application to the Office of Admissions, Purdue University, Lafayette, Indiana 47907 or to the appropriate campus.

Applications will be accepted from both in-state and out-of-state students after the completion of their junior year in high school. Indiana residents must file their applications prior to June 15. To be assured consideration for admission, applicants from out of state must file their applications prior to April 15.

ORIENTATION AND SUMMER REGISTRATION

During the summer prior to the beginning of the fall semester, new students are urged to come to the campus for one day of advanced enrollment. In addition to being a day for orientation, it is a day set aside to confer with academic counselors, to decide upon a specific schedule of classes for September, and to enroll in those classes. Upon receipt of fees, the University will complete the registration process and mail a class schedule to the student. *Registration will then be completed.* Students who find it impossible to attend the summer advanced enrollment will be required to report to the campus for delayed registration four days early in the fall. They must pay additional residence hall charges.

The remainder of the orientation program takes place during the three days before classes begin. In this part of the program, the students are given information on University organization and procedures and a further opportunity to consult with members of the staff. It is the desire of the University to give students every opportunity to succeed in their work, and the orientation plan is one means of giving this help to those who are new to the Purdue campus.

Expenses and Financial Aid

MINIMUM COSTS

THE EXPENSES of a year's work at Purdue University will depend a great deal upon how much a student can and wants to spend. Basic costs for a two semester school year on the Lafayette campus are:

Items	Estimated Costs Resident	Nonresident
University fees	$ 700	$ 700
Tuition		900
Books and supplies	150	150
Board and room	1060	1060
Sunday evening meals	55	55
Miscellaneous	400	450
Total	$2365	$3315

Rates are subject to change without published notice.

Male students electing Army or Air Force ROTC will be required to pay a $20 two-year military uniform deposit in addition to the regular University fee.

University fees include the general service, student activity, recreation facilities, and infirmary and medical fees. The medical fee covers the services of the University physicians, nurses, and infirmary. The activity and recreation facilities fees admit students to athletic events and the convocation series.

Miscellaneous expenses include such items as clothing, transportation, telephone, newspapers and magazines, dry cleaning and laundry, movies, haircuts, etc.

UNIVERSITY FEES

Fees and deposits for the programs included in this catalog follow. All fees are payable at the time of registration each semester. Fees are subject to change by the Board of Trustees without notice.

For Programs Offered at Lafayette Campus

1. The fees for the various programs offered at the Lafayette campus are:

	Each Semester
Building facilities fee	$ 30.00
General service fee	255.00
Tuition fee for students from outside the state	450.00
Medical and infirmary fee	20.50
Student activity fee (Purdue Memorial Union, Edward C. Elliott Hall of Music, and University Convocations)	25.50
Recreation facilities fee (including admission to home athletic contests, locker in gymnasium, towels, etc.)	19.00
Total Fees for Resident Student	350.00
Total Fees and Tuition for Students from Outside the State	800.00

2. Fees for the credit flight and support courses are established as follows:
   a. Flight enrollment—$285.
   b. Flight continuation fee—$350 with an additional $80 continuation fee for the instrument course.
   c. All three-hour ground school support courses are charged at the established rate of $25 per semester hour for those who are not otherwise enrolled in the University for that semester.
   d. There will be no refund provision.
3. Fees for noncredit personal service courses may vary for each course.

For Programs Offered at Other Purdue University Campuses

1. Curricula in technology
   a. Courses numbered from 100 to 499—$20 per credit hour ($40 for out-of-state students) plus $5 per laboratory hour.

   Example: (1.) **CHT 202. UNIT OPERATIONS II.** Class 3, Cr. $3 \times 20 = \$60$.
   (2.) **EET 214. ELECTRICITY FUNDAMENTALS.** Class 1, Lab. 4, cr. 2, $(2 \times 20) + (4 \times 5) = \$60$.

   b. Courses numbered 500 and above—$25 per credit hour ($50 for out-of-state students) plus $5 per laboratory hour. Fees may not necessarily apply to certain programs.
2. Personal service courses (courses numbered under 100)—$20 per certificate unit plus $5 per laboratory hour, unless otherwise noted in the description of the course.
3. Nursing—about $40 for uniforms should be added to other fees. Cost of transportation to and from hospitals and for field trips is paid by the individual students.
4. Practical nursing program (Calumet campus only) fees for first 16 weeks of classroom and laboratory instruction are $225.
   a. Courses scheduled during the four two-week periods of each of the four cooperating hospitals are individually priced and listed along with the course descriptions.

Breakage Fees. Course fees include the cost of normal breakage and wear and tear on equipment. An additional charge will be levied against individuals for excessive waste, loss, or breakage that may occur. Such special charges must be paid before course credit will be given.

Activity Fees (effective at Indianapolis campus only)

12 semester hours or more	$3
8-11 semester hours	2
1-7 semester hours	2

Activity Fees (effective at Calumet, Fort Wayne, and North Central campuses)

$15 per semester if 9 credit hours or more are taken.

Graduate Fees (effective at all campuses except Lafayette)

Resident	$25
Nonresident	50

Late Registration Fees

$5 per course during first week of classes, with a maximum of $10.

Diploma Fee. Students in applied technology must pay a diploma fee of $10 not less than 30 days before the close of the semester in which they expect to complete their work for an associate degree.

Special Examination Fees. For course credit by examination by a student who is admitted or registered as a temporary student, or any current student who has not paid full fees, the cost per course is $25.

Service Fee. Students requesting duplicate copies of fee receipts, schedule cards, etc., must pay a service fee of $1.

Refunds. To be eligible for a refund the student must notify the extension office and apply for a refund at the campus where he is registered at the time of his withdrawal.

Deposits on equipment are subject to regular service and breakage charges.

Refunds are not transferable from one registration period to another or from one student to another.

FINANCIAL AID

Purdue University maintains a complete program of financial assistance for new and continuing students. Most types of aid are based upon financial need and academic ability. Qualified students may obtain assistance in the form of scholarship, grant, long-term loan, part-time employment, or some combination of these aids.

Scholarship, grant, and loan funds are provided by alumni and friends of the University, the state and federal government, business and industry, and the University itself. Most aids are available without regard to the student's course of study, but some scholarship and loan funds are specifically designed for those applicants in a particular curriculum.

Additional information can be found in the Purdue University bulletin, *Financial Aid for Students,* or by contacting the Division of Financial Aids, Agriculture Annex II, Purdue University, Lafayette, Indiana 47907.

Student Welfare

LIVING ACCOMMODATIONS

PURDUE STUDENTS may secure living accommodations in residence facilities operated by the University, fraternities and sororities, cooperatives, and privately-operated facilities in the local community. Application for accommodations in University-operated facilities is made on a separate application form and in addition to the application for admission to the University. The student may request information about the various types of housing by indicating interest on the application for admission to the University. Application for residence halls may be made as soon as the student is informed of admission to Purdue University. Acceptance for admission to the University does not guarantee the availability of housing accommodations. *Two separate applications are required.*

Residence Halls for Undergraduate Men and Women

University owned and operated self-supporting residence halls now provide accommodations for approximately 10,000 single undergraduate men and women.

The halls for men are comprised of both the traditional type residence halls and the one-story court-type residence hall units. The traditional type halls are Cary Quadrangle, providing accommodations for 1,600 students, and Owen, Tarkington, and Wiley Halls, each providing space for 700 men. Three eight-story structures, McCutcheon, Harrison, and Shreve Halls, house approximately 800 students each. Harrison and Shreve Halls are coeducational units with men students assigned to one wing and women students assigned to the alternate wing.

The court-type halls provide double-room accommodations in small living groups of 16-20 that have their own living rooms and washroom facilities. The Fowler Courts provide 600 of these spaces; board services are provided in the adjacent cafeteria known as Fowler House. For several years, the Fowler Courts have been operated as a coeducational facility, and this plan of operation is expected to continue. The Terry Courts and O. P. Terry House are comparable to the Fowler Courts and Fowler House and are expected to also operate coeducationally with men and women housed separately by unit buildings.

Duhme, Shealy, Wood, Warren, and Vawter Halls comprise the original group of women's residence halls and normally are referred to as the Windsor Residence Halls. Meredith Hall, accommodates 600 women, and Earhart Hall houses 800 co-eds. All contain lounge space, recreation room, dining room, kitchen, and post office facilities.

All accommodations provide for a combined, full academic year, room and board agreement. The cost for two semesters in double room occupancy varies from $970 to $1090. (Rates quoted are subject to change as approved by the Board of Trustees.)

Married Students Apartments

Furnished efficiency apartments and furnished and unfurnished one- and two-bedroom apartments are available. Rent, which includes utilities, ranges from $90 to $111 per month for unfurnished accommodations and from $78 to $126 per month for furnished apartments. (Rates quoted are subject to change as approved by the Board of Trustees.)

PLACEMENT SERVICES

Two placement offices on the campus are available to students: University Placement Service and the Educational Placement Office.

The University Placement Service maintains contacts with a large number of firms in the industrial and business world and with government agencies. It provides facilities for informing students of employment possibilities and for arranging personal interviews with employer representatives.

The staff is available to students and alumni for assistance with their employment search and career development. Other services available are counseling, guidance, testing, and a wide variety of vocational and employer information.

The Educational Placement Office provides information about teaching, administrative, and supervisory positions in public and private elementary and secondary schools and colleges and universities, maintains a lifetime repository of credentials for registrants, and arranges for personal interviews of candidates by prospective employers who come to the campus seeking qualified personnel. Constant effort is made to assist in the professional advancement of graduates of the University who have demonstrated their interest and proficiency in the teaching profession.

MILITARY SERVICES

ROTC programs are offered by all three services—the Army, the Navy, and the Air Force. The choice of a particular service is an individual matter. Each of the military departments at Purdue can provide information upon which a student can determine his choice. Military courses are pursued in conjunction with the academic curriculum and receive academic credit. Each service offers programs which lead to a commission as an officer upon graduation.

Special Facilities

LIBRARIES

THE UNIVERSITY LIBRARIES offer more than one million volumes housed in the General Library located in the Memorial Center, in 28 departmental

or special libraries and collections, and in the regional campuses. Holdings have long been especially strong in agriculture, engineering, and science. In recent years there has been notable growth in the libraries' holdings in the humanities and social sciences. In addition to materials in book and journal formats, the libraries have over 400,000 microforms (reel, film, microcards, microfiche, etc.) which make available older scholarly materials not readily obtainable in other forms, as well as technical reports published in microform. The libraries are a depository for federal documents and also receive Indiana state documents.

The University has a tradition of strong departmental libraries. In addition to the journals and monographs for their field, these libraries also have the abstracting and indexing services and special bibliographies needed for research and investigation in the various subjects.

Special collections include the Charles Major library of history and general literature, the George Ade collection, the Anna Embree Baker collection of works designed and printed by Bruce Rogers, the Krannert economic history collection, and the W.F.M. Goss library of engineering history.

AUDIO-VISUAL CENTER

The Audio-Visual Center, located in the Memorial Center (ground floor), makes available to students and staff many types of teaching materials such as films, filmstrips, slides, transparencies, and audio tapes. It provides an advisory and demonstration service for these materials and the equipment required in their use. It has a library of over 3,000 films and 5,000 audio tapes that can be used in the center on the Purdue campuses, or by borrowers throughout the United States.

Student Counseling Service

COUNSELING

On the Lafayette campus for general counseling about the various academic areas of the School of Technology, the director of the Office of Counseling Services, located in the Michael Golden Building, should be contacted.

General counseling for programs offered at other campuses may be obtained by contacting the admissions officer at the respective campus.

Each student is assigned to an academic counselor who works closely with him throughout his career on campus. Generally speaking, his academic counselor becomes an adviser to assist him in the selection of courses to be followed and counsels him on the vocational opportunities following graduation.

Calumet Campus

Architectural Technology	G. R. Sullivan
Chemical Technology	H. D. Fayle
Civil Engineering Technology	D. E. Cochran
Computer Technology	John Maniotes
Electrical Engineering Technology	L. E. Brunner

Industrial Education	A. J. Parker
Industrial Engineering Technology	C. E. Columbus
Industrial Supervision	J. T. Malone
Mechanical Drafting Design Technology	C. E. Columbus
Mechanical Engineering Technology	C. E. Columbus
Metallurgical Engineering Technology	A. L. Kaye
Nursing	Joyce Ellis

Fort Wayne Campus

Architectural Technology	L. W. Smith
Civil Engineering Technology	L. W. Smith
Computer Technology	J. T. Gorgone
Electrical Engineering Technology	D. E. Nold
Industrial Education	F. L. Bushong
Industrial Engineering Technology	C. B. Snyder
Industrial Supervision	C. H. Creasser
Mechanical Drafting Design Technology	C. B. Snyder
Mechanical Engineering Technology	C. B. Snyder
Mental Health Technology	J. E. True
Nursing	Doris Mack
Supervision Technology	D. J. Schmidt

Indianapolis Campus

Architectural Technology	W. E. Davis
Chemical Technology	D. E. Bowman
Civil Engineering Technology	R. J. Beck
Computer Technology	J. F. Dalphin
Electrical Engineering Technology	P. K. Sharp
Industrial Education	Edgar Fleenor
Industrial Engineering Technology	R. A. Peale
Industrial Supervision	H. L. Wisner
Mechanical Drafting Design Technology	R. A. Peale
Mechanical Engineering Technology	R. A. Peale
Nursing	Janet Barber

North Central Campus

Architectural Technology	R. L. Taylor
Computer Technology	J. F. Gallagher
Electrical Engineering Technology	W. L. Stoakes
Industrial Education	R. F. Schwarz
Industrial Engineering Technology	R. M. Bobillo
Mechanical Engineering Technology	F. R. Lisarelli
Nursing	R. E. Fullen

Lafayette Campus

Aviation Electronic Technology	W. P. Duncan
Aviation Maintenance Technology	W. P. Duncan
Civil Engineering Technology	D. D. Moss
Computer Technology	D. D. Moss
Electrical Engineering Technology	V. W. Hoeche
Foundry Technology	H. A. Montgomery

Plans of Study

TYPICAL PROGRAMS for students pursuing degrees in the areas within the School of Technology are listed on the following pages. Listed are plans of study for students in two-year programs leading to the degree of Associate in Applied Science, four-year programs leading to the degree of Bachelor of Science, and certificate programs.

ABBREVIATIONS

ART—Architectural Technology
AT—Aviation Technology
BCHM—Biochemistry
BIOL—Biological Sciences
CDFL—Child Development and Family Life
CET—Civil Engineering Technology
CHM—Chemistry
CHT—Chemical Technology
COM—Communication
CPT—Computer Technology
ECON—Economics
ED—Education
EET—Electrical Engineering Technology
EG—Engineering Graphics
ENGL—English
F&N—Food and Nutrition
GNT—General Studies
HIST—History
H&S—Health & Safety
IE—Industrial Engineering
IED—Industrial Education
IET—Industrial Engineering Technology
INDM—Industrial Management
INSM—Institutional Management
IS—Industrial Supervision
MA—Mathematics
MET—Mechanical Engineering Technology
MHT—Mental Health Technology
MTT—Metallurgical Engineering Technology
NT—Nursing
PCOL—Pharmacology
PCT—Pollution Control Technology
PHIL—Philosophy
PHYS—Physics
POL—Political Science
PSY—Psychology
SOC—Sociology
STAT—Statistics

ASSOCIATE IN APPLIED SCIENCE DEGREE

The Nature of Applied Science

Scientific and technological complexity ranges over a broad spectrum, from extremely simple to highly complex and abstract activity. At one extreme are the pure scientist and the engineering scientist; at the other, the mechanic, the craftsman, and the service personnel.

The Engineer. The 37th Annual Report of the Engineering Council for Professional Development, September 30, 1969 defines engineering as "the profession in which a knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to utilize, economically, the materials and forces of nature for the benefit of mankind."

The Engineering Technician. The National Society for Professional Engineers has approved this definition of the engineering technician provided by the Board of the Institute for the Certification of Engineering Technicians:

"An engineering technician is one who, in support of and under the direction of professional engineers or scientists, can carry out in a responsible manner either proven techniques which are common knowledge among those who are technically expert in a particular technology, or those techniques especially prescribed by professional engineers.

"Performance as an engineering technician requires the application of principles, methods, and techniques appropriate to a field of technology, combined with practical knowledge of the construction, application, properties, operation, and limitations of engineering systems, processes, structures, machinery, devices, or materials, and, as required, related manual crafts, instrumental, mathematical, or graphic skills.

"Under professional direction an engineering technician analyzes and solves technological problems, prepares formal reports on experiments, tests, and other similar projects or carries out functions such as drafting, surveying, technical sales, advising consumers, technical writing, teaching or training. An engineering technician need not have an education equivalent in type, scope, and rigor to that required of an engineer; however, he must have a more theoretical education with greater mathematical depth, and experience over a broader field than is required of skilled craftsmen who often work under supervision."

The Skilled Craftsman. The work of the engineer and the technician would be meaningless without the contribution of the skilled craftsman who carries out engineering ideas. A toolmaker, for example, fabricates a jig or die from a design conceived by the engineer and detailed by the technician. The electrician, pipefitter, welder, machinist, chemical operator, and surveyor's rodman likewise use their skills to carry out the work of the engineering team.

Need. Since it now appears improbable that our nation will be able to attain the goal of 70,000 to 80,000 engineers per year, another approach to the problem is necessary. The most reasonable solution appears to be one of making the present professional engineer more efficient by providing him with

assistance in the form of an engineering technician. Many experts believe that there should be a ratio of from three to five engineering technicians for each engineer. This would indicate that 100,000 to 150,000 engineering technicians should be trained per year.

Currently the United States has only about 16,000 graduates of engineering technology programs coming on the job market each year. This simply means there is a large, unsatisfied demand for engineering technicians. The opportunities in this field are virtually unlimited.

Developed With Industrial Cooperation

Various courses are offered to cover the basic knowledge and practices of present-day industry. Industrial leaders have been consulted to learn the kind of specific technical information required by persons who take jobs in industry. Many members of the instructional staff are drawn from local industries, but course administration, teaching material, and standards of instruction are under the direction of the departments involved.

TWO-YEAR PLANS OF STUDY LEADING TO ASSOCIATE IN APPLIED SCIENCE DEGREE

There are 18 two-year curricula available on the five campuses of Purdue University. It should be noted that all are not available at every campus. Refer to the beginning of each curriculum description for locations where it is offered. Curricula are listed as follows:

ART—Architectural Technology

AET—Aviation Electronics Technology

AMT—Aviation Maintenance Technology

CHT—Chemical Technology

CET—Civil Engineering Technology

CPT—Computer Technology

EET—Electrical Engineering Technology

FYT—Foundry Technology

GFT—General Aviation Flight Technology

IET—Industrial Engineering Technology

IIT—Industrial Illustration Technology

MDT—Mechanical Drafting Design Technology

MET—Mechanical Engineering Technology

MHT—Mental Health Technology

MTT—Metallurgical Engineering Technology

NT—Nursing

PCT—Pollution Control Technology

ARCHITECTURAL TECHNOLOGY

Offered at: Calumet, Fort Wayne, Indianapolis, North Central.

This curriculum is designed to prepare students for technological employment with architects, contractors, building materials suppliers, and various governmental agencies.

Emphasis is placed on architectural drafting, construction details, construction materials, specifications, regulations, and estimating, as well as on related courses in mathematics and physical science. Also included are courses dealing with some of the historic, economic, and human relation aspects related to the individual in our American industrial life.

Graduates are prepared to accept positions as architectural detailers, architectural draftsmen, estimators, expeditors, planning technicians, field inspectors, and sales representatives. Graduates may also continue their education by pursuing a Bachelor of Science degree with a major in construction technology.

FRESHMAN YEAR

First Semester		Second Semester	
(2)	ART 118 (Architectural Projections)	(2)	ART 121 (Freehand Drawing II)
(2)	ART 120 (Freehand Drawing I)	(3)	ART 150 (Architectural Construction I)
(2)	ART 172 (Systems of Construction)	(2)	ART 164 (Building Materials)
(3)	CET 104 (Elementary Surveying)	(3)	CET 160 (Statics)
(5)	MA 150 (Mathematics for Technology)	(4)	GNT 136 (Physics: Mechanics and Heat)
(3)	SOC 100 (Introductory Sociology)	(2)	ENGL 101 (English Composition I)
(17)		(16)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(3)	ART 222 (Architectural Construction II)	(3)	ART 210 (History of Architecture)
(2)	ART 276 (Specifications and Contract Documents)	(3)	ART 224 (Architectural Construction III)
(3)	ART 284 (Mechanical Equipment for Buildings)	(3)	ART 280 (Quantity Survey)
(3)	CET 260 (Strength of Materials)	(3)	CET 266 (Materials Testing)
(4)	GNT 176 (Physics: Electricity, Sound, and Light)	(3)	IS 268 (Elements of Law)
(3)	COM 114 (Fundamentals of Speech Communication)	(3)	GNT 220 (Technical Report Writing)
(18)		(18)	

AVIATION ELECTRONICS TECHNOLOGY

Offered at: Lafayette.

The aviation electronics technology curriculum is a two-year program which leads to the degree of Associate in Applied Science. The program is a combination of technical and general academic studies offered by the Department of Aviation Technology for persons interested in avionic maintenance. The curriculum is designed to produce a graduate competent in trouble shooting, installation, and servicing of aircraft communication and navigation equipment.

Along with classroom theory and laboratory work, the curriculum includes specialized courses in aircraft electrical systems, communications, navigation, and pulse equipment. Upon successful completion of the program, an FCC second-class radio-telephone operator's license is awarded to the graduate.

Graduates of the aviation electronics technology curriculum may elect to continue their education in either industrial education or industrial supervision to earn a Bachelor of Science degree. Upon completion of the associate degree program, students who desire and are qualified may apply for a co-op work-study program with a major air carrier. The co-op arrangement is available only to those students pursuing a Bachelor of Science in Industrial Supervision.

FRESHMAN YEAR

First Semester		Second Semester	
(5)	MA 150 (Mathematics for Technology)*	(1)	EG 113 (Slide Rule and Graphs)
(2)	ENGL 101 (English Composition I)	(2)	ENGL 102 (English Composition II)
(3)	AT 131 (Aircraft Electricity)	(3)	AT 133 (Aircraft Communication Systems)
(3)	AT 132 (Electronics I)	(3)	AT 134 (Electronics II)
(2)	AT 135 (Avionics Laboratory I)	(2)	AT 136 (Avionics Laboratory II)
(3)	EG 110 (Drafting Fundamentals)	(4)	AT 138 (Aircraft and Missile Orientation)
(18)		(15)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(3)	MA 221 (Calculus for Technology I)	(3)	MA 222 (Calculus for Technology II)
(4)	PHYS 220 (General Physics)	(4)	PHYS 221 (General Physics)
(3)	COM 114 (Fundamentals of Speech Communication)	(3)	AT 233 (Aircraft Pulse and Microwave Systems)
(3)	AT 231 (Aircraft Navigation Systems)	(3)	AT 234 (Electronics IV)
(3)	AT 232 (Electronics III)	(3)	AT 236 (Aircraft Automatic Flight Control Systems)
(2)	AT 235 (Avionics Laboratory III)	(2)	AT 237 (Avionics Laboratory IV)
(18)		(18)	

* See mathematics footnote, p. 8.

AVIATION MAINTENANCE TECHNOLOGY

Offered at: Lafayette.

The aviation maintenance technology program is designed to qualify high school graduates as airframe and powerplant technicians and to give basic technical training as preparation for many industrial positions.

It is an intensive, two-year undergraduate program which has been approved by the Federal Aviation Administration. Graduates become licensed airframe and powerplant mechanics upon successfully passing the FAA examinations.

The curriculum includes specialized courses in aircraft maintenance and technology, as well as general academic courses. In the shops and laboratories, skills will be developed in engine and airframe inspection, maintenance, and repair. The shop activities stress the use of tools and test equipment.

The first year is devoted primarily to light aircraft maintenance and basic aircraft engines. During the second year students will have the opportunity to get actual mechanical experiences on airline type equipment as well as continuing training in more advanced engines, structures, and systems.

Upon successfully completing the aviation maintenance program, students may continue for a Bachelor of Science in Industrial Education, Industrial Supervision, or Manufacturing Technology.

Students planning to pursue a degree in industrial supervision may apply for a cooperative work-learning program with a major airline or aircraft manufacturer.

FRESHMAN YEAR

First Semester		Second Semester	
(3)	IED 125 (Basic Metal Practices)	(5)	AT 115 (Aircraft Structures)
(1)	AT 100 (Introduction to Aviation Technology)	(5)	AT 116 (Airframe Maintenance)
(1)	AT 113 (Federal Air Regulations and Forms)	(3)	EG 110 (Drafting Fundamentals)
(5)	AT 112 (Aircraft Piston Engines)	(3)	COM 114 (Fundamentals of Speech Communication)
(4)	AT 114 (Aircraft Piston Engine Accessories)	(3)	Algebra and/or trigonometry elective
(2)	ENGL 101 (English Composition I)		
(3)	Algebra and/or trigonometry elective		
(19)		(19)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(2)	AT 209 (Aircraft Welding and Materials)	(1)	AT 210 (Aircraft Engine Operation)
(4)	AT 213 (Aircraft Systems)	(2)	AT 211 (Transport Aircraft Maintenance)
(5)	AT 215 (Aircraft Electricity)	(5)	AT 214 (Aircraft Gas Turbine Engines)
(1)	EG 113 (Slide Rule and Graphs)	(2)	AT 216 (Aircraft Propeller Systems)
(2-3)	English/communication elective	(1)	AT 218 (General Aviation Aircraft Maintenance)
(3)	Physics elective	(2)	AT 219 (Survey of FAA Mechanic Requirements)
		(3)	Laboratory science elective
(17-18)		(16)	

CHEMICAL TECHNOLOGY

The program is designed to prepare young men and women for employment in the chemical and allied product industries. The knowledge gained will enable the technician to work under a chemist, chemical engineer, or plant supervisor in helping to develop procedures, make tests, develop research models, and to make the necessary technical measurements to operate a chemical project or plant. There are three options available in this program.

Pharmaceutical Option and Process Option

Offered at: Indianapolis.

FRESHMAN YEAR

First Semester		Second Semester	
(4)	CHM 109 (General Chemistry)	(4)	CHM 110 (General Chemistry with Qualitative Analysis)
(3)	ENGL 104 (English Composition I)	(3)	MA 221 (Calculus for Technology I)
(1)	ENGL 185 (Developmental Reading)	(4)	PHYS 220 (General Physics)
(3)	IET 104 (Industrial Organization)	(3)	POL 101 (Introduction to Government)
(5)	MA 150 (Mathematics for Technology)*	(3)	COM 114 (Fundamentals of Speech Communication)
(16)		(17)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(4)	CHM 224 (Introductory Quantitative Analysis)	(4)	CHT 225 (Quantitative Analysis, Instrumental)
(3)	MA 222 (Calculus for Technology II)	(3)	GNT 220 (Technical Report Writing)
(4)	PHYS 221 (General Physics)	(3)	IS 252 (Human Relations in Industry)
(6-7)	Technical electives	(8-7)	Technical electives
(17-18)		(18-17)	

PHARMACEUTICAL OPTION ELECTIVES

(3) BIOL 103 (Principles of Biology)
(3) CHM 255 (Organic Chemistry)
(1) CHM 255L (Organic Chemistry Laboratory)
(3) BCHM 100 (Introduction to Biochemistry)
(3) CHM 256 (Organic Chemistry)
(1) CHM 256L (Organic Chemistry Laboratory)

PROCESS OPTION ELECTIVES

(3) CHT 273 (Physical Chemistry of Materials)
(3) CHT 201 (Unit Operations I)
(4) CHM 251 (Organic Chemistry)
(1) CHM 251L (Organic Chemistry Laboratory)
(3) CHT 202 (Unit Operations II)

* See mathematics footnote, p. 8.

General Industrial Option

Offered at: Calumet.

FRESHMAN YEAR

First Semester		Second Semester	
(4)	CHT 109 (General Chemistry)	(4)	CHT 212 (Industrial Chemistry: Qualitative)
(3)	COM 114 (Fundamentals of Speech Communication)	(3)	MA 221 (Calculus for Technology I)
(1)	ENGL 185 (Developmental Reading)	(5)	CHT 251 (Organic Chemistry)
(3)	IET 104 (Industrial Organization)	(3)	POL 101 (Introduction to Government)
(5)	MA 150 (Mathematics for Technology)*	(2)	ENGL 101 (English Composition I)
(16)		(17)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(4)	CHT 252 (Industrial Chemistry: Quantitative)	(4)	CHT 225 (Quantitative Analysis, Instrumental)
(3)	MA 222 (Calculus for Technology II)	(3)	GNT 220 (Technical Report Writing)
(4)	PHYS 220 (General Physics)	(3)	IS 252 (Human Relations in Industry)
(3)	CHT 273 (Physical Chemistry of Materials)	(4)	PHYS 221 (General Physics)
(3)	CHT 201 (Unit Operations I)	(3)	CHT 202 (Unit Operations II)
(17)		(17)	

* See mathematics footnote, p. 8.

CIVIL ENGINEERING TECHNOLOGY

Offered at: Calumet, Fort Wayne, Indianapolis.

This program is designed to prepare students for employment with land surveyors, highway departments, contractors, city engineering offices, railroads, and engineering consultants, as well as in other specializations of civil engineering technology.

Graduates of this program accept positions as technicians in the offices of contractors, city engineers, and professional engineers; as topographers, structural draftsmen, and steel and concrete laboratory technicians; and as instrument men with land surveys, property surveys, and highway surveys. With additional experience students may acquire positions as supervisors, or chiefs of parties, in a variety of work associated with civil engineering.

Graduates may also continue their education by pursuing a Bachelor of Science degree with a major in construction technology.

FRESHMAN YEAR

First Semester		Second Semester	
(3)	CET 104 (Elementary Surveying)	(3)	CET 160 (Statics)
(3)	EG 110 (Drafting Fundamentals)	(2)	CET 208 (Route Surveying)
(1)	MET 100 (Applied Engineering Computations)	(3)	ART 150 (Architectural Construction I)
(5)	MA 150 (Mathematics for Technology)*	(3)	MA 221 (Calculus for Technology I)
(4)	GNT 136 (Physics: Mechanics and Heat)	(4)	GNT 176 (Physics: Electricity, Sound, and Light)
(3)	Social science elective	(2)	ENGL 101 (English Composition I)
(19)		(17)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(3)	CET 209 (Land Surveying and Subdivision)	(3)	CET 266 (Materials Testing)
(3)	CET 253 (Hydraulics and Drainage)	(3)	CET 280 (Structures I)
(3)	CET 260 (Strength of Materials)	(3)	ART 280 (Quantity Survey)
(2)	ART 276 (Specifications and Contract Documents)	(3)	IS 268 (Elements of Law)
(3)	MA 222 (Calculus for Technology II)	(3)	GNT 220 (Technical Report Writing)
(3)	COM 114 (Fundamentals of Speech Communication)	(3)	Technical elective
(17)		(18)	

* See mathematics footnote, p. 8.

COMPUTER TECHNOLOGY

Offered at: Calumet, Fort Wayne, Indianapolis, and North Central.

This two-year associate degree program is designed to produce a graduate competent in computer programming in either the commercial or technical area, depending on which of the two options is selected. It prepares a person to perform the following functions: analyze problems, design flowcharts, write computer programs, verify programs, and evaluate and modify existing programs. It also familiarizes him with procedures common in his area of specialization.

Graduates may continue their education by pursuing a Bachelor of Science degree with a major in computer technology.

FRESHMAN YEAR

First Semester		Second Semester	
(3)	CPT 101 (Introduction to Computers)	(3)	CPT 122 (Computer Math)
(3)	CPT 111 (Unit Record Data Processing)	(3)	CPT 131 (Assembly Language Programming I)
(5)	MA 150 (Mathematics for Technology)*	(2)	ENGL 101 (English Composition I)
(1)	ENGL 185 (Developmental Reading)	(3)	IET 104 (Industrial Organization)
(3)	COM 114 (Fundamentals of Speech Communication)	(3-4)	Option course
(15)		(14-15)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(3)	CPT 132 (Assembly Language Programming II)	(1)	CPT 198 (Data Processing Practice I) or CPT 294 (Computer Seminar and Field Trips)
(3)	CPT 264 (Compiler Language Programming I)	(3)	ECON 210 (Principles of Economics)
(3)	CPT 225 (Statistical Methods)	(3)	GNT 220 (Technical Report Writing)
(6-7)	Option courses (2)	(6)	Option courses (2)
(3)	Elective	(3)	Elective
(18-19)		(16)	

OPTION COURSES

Option courses should be taken in the sequence indicated.
Commercial Option: INDM 200, 201; CPT 254, 265, 284 or 286.
Technical Option: PHYS 220, 221; MA 221, 222; CPT 220.

* See mathematics footnote, p. 8.

ELECTRICAL ENGINEERING TECHNOLOGY

Offered at: All campuses.*

The electrical engineering technology program is a combination of courses in electricity, electronics, mathematics, science, and general academic areas that leads to the degree of Associate of Applied Science. The program is designed to prepare students for employment as technicians in research laboratories, electronic industries, and in any industry that uses electrical power or electronic controls.

The basic curriculum will provide the student with sufficient education to find employment in the fields of communications electronics, industrial electronics, microwaves, military electronics, computer electronics, automation, electronic servicing, television, electrical power, aviation electronics, and others. Specialization in these areas is provided by technical elective courses in the second year of the program.

Students who obtain the degree of Associate in Applied Science are eligible for consideration for admission to curricula leading to the degree of Bachelor of Science. Approximately two additional years of study are necessary to complete the requirements for this degree.

FRESHMAN YEAR

First Semester		Second Semester	
(2)	EET 103 (Electronics I: Vacuum Tubes and Transistors)	(3)	EET 153 (Electronics II)
(3)	EET 101 (Electrical Circuits I)	(3)	EET 151 (Electrical Circuits II)
(2)	EET 113 (EET Laboratory I)	(2)	EET 163 (EET Laboratory II)
(5)	MA 150 (Mathematics for Technology)†	(4)	GNT 136 (Physics: Mechanics and Heat)
(2)	ENGL 101 (English Composition I)	(3)	MA 221 (Calculus for Technology I)
(3)	Nontechnical elective	(3)	COM 114 (Fundamentals of Speech Communication)
(17)		(18)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(3)	EET 203 (Electronics III)	(3)	EET 253 (Electronics IV)
(3)	EET 211 (Electric Machinery)	(1)	EET 263 (EET Laboratory IV)
(2)	EET 213 (EET Laboratory III)	(3)	EG 110 (Drafting Fundamentals)
(3)	MA 222 (Calculus for Technology II)	(2)	EET specialty laboratory
(3)	Technical elective	(3)	Technical elective
(4)	GNT 176 (Physics: Electricity, Sound, and Light)	(6)	Nontechnical electives
(18)		(18)	

TECHNICAL ELECTIVES‡

Offered periodically depending upon student and local industrial needs.

EET 301, 302, 303, 306, 307, 321, 351, 352, 353, 354, 356, 361, 362, 363, 364, 366, 371, 372, 373, 374, 376, 381, 383, 386, 499.

* Also offered at Kokomo.
† See mathematics footnote, p. 8.
‡ Refer to section on course description in back of catalog.

FOUNDRY TECHNOLOGY

Offered at: Lafayette.

This program is designed to prepare graduates for employment in the foundry industry—a rapidly modernizing industry that provides increasing opportunity for technicians. These technicians will be performing routine and repetitive engineering production type tasks formerly assigned to engineers. It is anticipated that these technicians will be performing such tasks in a variety of specialized technical work areas within the foundry.

The curriculum contains some 67 credit hours of work which include 12 courses in technical support areas such as drafting, physics, mathematics, and chemistry; five courses in a non-technical or humanities area such as English, communication, and psychology; and seven courses in the foundry specialties area such as casting processes, melting units, and foundry sands. Each foundry specialty course will be taught on a see—hear—do concept in order to provide the optimum learning situation for the student.

FRESHMAN YEAR

First Semester		Second Semester	
(3)	EG 110 (Drafting Fundamentals)	(3)	CHM 113 (Introductory Chemistry)
(3)	ENGL 100 (English Composition I)	(2)	IET 244 (Fundamentals of Production Cost)
(5)	MA 150 (Mathematics for Technology)*	(3)	MET 140 (Casting Processes)
(1)	MET 100 (Applied Engineering Computations)	(2)	MET 204 (Production Drawing)
(2)	MET 180 (Materials and Processes)	(3)	COM 114 (Fundamentals of Speech Communication)
(3)	PHYS 210 (The Nature of Physical Science I)	(3)	PHYS 211 (The Nature of Physical Science II)
(17)		(16)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(3)	MTT 184 (Ferrous Metallurgy)	(3)	MTT 280 (Nonferrous Metallurgy)
(2)	MET 145 (Foundry Sands)	(3)	EET 216 (Electrical Machines and Controls)
(4)	MET 212 (Mechanics of Materials)	(3)	IS 152 (Human Relations in Industry)
(2)	MET 240 (Melting Units, Operation and Design)	(3)	IET 204 (Techniques of Maintaining Quality)
(2)	MET 335 (Basic Machining)	(3)	MET 241 (Weld Processes and Design)
(3)	PSY 120 (Elementary Psychology)	(3)	MET 249 (Foundry Problems)
(16)		(18)	

* See mathematics footnote, p. 8.

GENERAL AVIATION FLIGHT TECHNOLOGY

Offered at: Lafayette.

The general aviation flight technology curriculum is an academically oriented progression of study directed toward training a student in primary, advanced, and instrument flight. This curriculum is integrated with two years of college general studies.

Application of the background gained in this technology can be made either in general aviation or in a variety of other fields where flight orientation is important to a successful career. This is an intensive, two-year, undergraduate college program.

Prior to final acceptance into the general aviation flight technology curriculum, a student must present evidence that he has satisfactorily completed a Federal Aviation Administration second-class medical examination.

FRESHMAN YEAR

First Semester		Second Semester	
(3)	MA 153 (Algebra and Trigonometry I)	(3)	MA 154 (Algebra and Trigonometry II)
(2)	ENGL 101 (English Composition I)	(2)	ENGL 102 (English Composition II)
(3)	HIST 252 (The United States and Its Place in World Affairs)	(3)	AT 125 (Aeronautics)
(3)	INDM 200 (Introductory Accounting)	(3)	AT 121 (Aircraft Engines)
(1)	AT 143 (Private Flight)	(1)	AT 148 (Commercial Flight I)
(3)	AT 144 (FAA Private Requirements)	(3)	AT 244 (FAA Commercial Requirements)
(15)		(15)	

Summer Session*

(1) AT 243 (Commercial Flight II)
(3) AT 244 (FAA Commercial Requirements II)

(4)

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(3)	COM 114 (Fundamentals of Speech Communication)	(3)	ENGL 420 (Business Writing General Applications)
(4)	PHYS 220 (General Physics)	(4)	PHYS 221 (General Physics)
(3)	AT 128 (Aircraft Systems and Components)	(3)	PSY 120 (Elementary Psychology)
(1)	AT 248 (Commercial Flight III)	(1)	AT 341 (Instrument Flight)
(3)	AT 249 (FAA Commercial Requirements)	(3)	AT 342 (Instrument Lectures)
(3)	Elective	(3)	Elective
(17)		(17)	

* Attendance is required for one summer session to complete the required flying sequence in a two-year period. The summer session will not necessarily be as outlined in the listed curriculum.

INDUSTRIAL ENGINEERING TECHNOLOGY

Offered at: Calumet, Fort Wayne, Indianapolis, North Central*

This field is designed to develop technicians to support the problem-solving and decision-making functions in management and to prepare for planning and control, work method analysis, work measurements, quality assurance and controls, and systems and procedures analysis. Practical applications of production-oriented operations, research techniques, data processing, and computer programming fundamentals are stressed. Because an industrial engineering technician is concerned with an organization which has human dimensions at least as important as the technical ones, this aspect is also stressed throughout the curriculum.

FRESHMAN YEAR

First Semester		Second Semester	
(3)	EG 110 (Drafting Fundamentals)	(3)	English‡
(3)	IET 104 (Industrial Organization)	(3)	IET 204 (Techniques of Maintaining Quality)§
(5)	MA 150 (Mathematics for Technology)†	(3)	CPT 200 (Computer Programming Fundamentals)
(1)	MET 100 (Applied Engineering Computations)	(3)	STAT 401 (Elementary Statistical Methods)
(4)	GNT 136 (Physics: Mechanics and Heat)	(2)	MET 335 (Basic Machining)
		(4)	GNT 176 (Physics: Electricity, Sound, and Light)
(16)		(18)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(3)	ECON 210 (Principles of Economics)	(3)	GNT 220 (Technical Report Writing)
(3)	IET 224 (Production Planning and Control)	(3)	IET 250 (Fundamentals of Production Cost Analysis)
(3)	IET 262 (Motion Study and Work Methods)§	(3)	IET 266 (Work Measurement and Incentives)§
(3)	IS 252 (Human Relations in Industry)	(3)	COM 114 (Fundamentals of Speech Communication)
(2)	IET 220 (Critical Path Analysis)	(4-6)	Technical electives
(3)	Technical electives		
(17)		(16-18)	

TECHNICAL ELECTIVES

Methods Improvement Option: IET 120, 272, 296.
Material Handling Option: IET 268, 296, 312.
Quality Control Option: STAT 402, IET 354, 364.
Production Option: IET 296, 323, 324.

* Also offered at Eastern Indiana Center in Richmond.

† See mathematics footnote, p. 8.

‡ Students will be counseled into ENGL 101 and 286, 100, 103, or 104, depending on the individual student's needs.

§ North Central students will take these courses at Calumet.

INDUSTRIAL ILLUSTRATION TECHNOLOGY

Offered at: Lafayette.

This curriculum is designed to prepare students as technical illustrators who will be competent in designing and producing the finished art work necessary for brochures, charts, catalogs, instruction booklets, posters, and other publications of modern industry. At the same time they will have gained the additional skills of a draftsman and be technically prepared for advancement as a product designer of an unlimited number of manufactured products.

Graduates are prepared to accept positions in the sales divisions of industrial organizations, in governmental agencies, in certain phases of printing, advertising and display, as well as in drafting rooms of manufacturing companies. Some openings are also available in television and allied entertainment fields. The aggressive graduate should be able to operate on a free-lance basis after two or three years of practical experience.

FRESHMAN YEAR

First Semester		Second Semester	
(3)	EG 110 (Drafting Fundamentals)	(3)	EG 111 (Advanced Drafting)
(3)	EG 112 (Layout, Lettering, and Typography)	(2)	EG 210 (Industrial Sketching)
(2)	EG 213 (Freehand Drawing)	(3)	EG 212 (Descriptive Geometry)
(2)	ENGL 101 (English Composition I)	(2)	ENGL 102 (English Composition II)
(3)	MA 153 (Algebra and Trigonometry I)	(3)	MA 154 (Algebra and Trigonometry II)
(2)	MET 180 (Materials and Processes)	(2)	MET 335 (Basic Machining)
(15)		(15)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(3)	EG 311 (Industrial Arts Design)	(3)	ECON 210 (Principles of Economics)
(2)	EG 315 (Graphical Presentation of Data)	(3)	EG 312 (Shades, Shadows, and Perspective)
(3)	EG 317 (Production Illustration)	(3)	EG 318 (Project in Technical Illustration)
(3)	IET 104 (Industrial Organization)	(3)	EG 319 (Basic Product Design) or A&D 375 (Sculpture)
(4)	PHYS 205 (Physics for Agricultural Students)	(3)	IED 225 (Graphics of Communication)
(3)	SOC 100 (Introductory Sociology) or COM 114 (Fundamentals of Speech Communication)	(3)	IS 252 (Human Relations in Industry)
(18)		(18)	

MECHANICAL DRAFTING DESIGN TECHNOLOGY

Offered at: Calumet, Fort Wayne, Indianapolis.*

This program is intended to prepare senior draftsmen and junior design draftsmen of a mechanical nature for manufacturing and construction industries, government, utilities, and other service firms. In addition, graduates will be prepared to make industrial illustrations for parts manuals, brochures, proposals, and assembly instructions.

Mechanical drafting design technology concerns matters such as the preparation of sketches and drawings for design proposals, experimental models, prototype configurations, and production parts and assemblies.

Graduates of this program may perform drafting design functions such as the development of the design of a sub-assembly or major component under the direction of an engineer or an engineering technologist.

With additional experience, promotion to checker, designer, or drafting supervisor is possible. Also, this program is sufficiently broad to allow for progression into a variety of other technical or supervisory positions.

FRESHMAN YEAR

First Semester

(1) MET 100 (Applied Engineering Computations)
(2) MET 180 (Materials and Processes)
(3) EG 110 (Drafting Fundamentals)
(3) ENGL 104 (English Composition I)
(3) MA 111 (Algebra)
(3) CPT 100 (Computer Utilization)

(15)

Second Semester

(2) MET 256 (Material Fabrication)
(2) MET 204 (Production Drawing)
(3) MET 112 (Applied Mechanisms)
(3) MET 156 (Graphical Computations)
(3) MA 112 (Trigonometry)
(3) COM 114 (Fundamentals of Speech Communication)

(16)

SOPHOMORE YEAR

Third Semester

(4) MET 212 (Mechanics of Materials)
(2) MET 236 (Jig and Fixture Design)
(3) MET 330 (Introduction to Fluid Power)
(3) EG 317 (Production Illustration)
(4) GNT 136 (Physics: Mechanics and Heat)

(16)

Fourth Semester

(2) MET 288 (Die Design)
(3) MET 299 (Mechanical Engineering Technology)
(3) IET 204 (Techniques of Maintaining Quality)
(4) GNT 176 (Physics: Electricity, Sound, and Light)
(3) Elective

(15)

* Also offered at Indiana University-Southeastern at Jeffersonville.

MECHANICAL ENGINEERING TECHNOLOGY

Offered at: All campuses.*

This program is intended to prepare specialists in the development of machines and products, in production processes, in the installation and maintenance of machines, and in solving repetitive engineering problems.

Mechanical engineering technology concerns the generation, transmission, and utilization of mechanical and fluid energy and the design and production of tools and machines and their products.

Graduates of the program accept jobs as laboratory technicians, engineering aides, plant maintenance men, layout men, production assistants, and technical salesmen. With additional experience, promotion to positions such as industrial supervisors, machine and tool designers, technical buyers, production expeditors, and cost estimators is possible.

Co-op work programs with industry may be made available to students on an individual basis.

FRESHMAN YEAR

First Semester

(1) MET 100 (Applied Engineering Computations)
(2) MET 180 (Materials and Processes)
(2) MET 210 (Applied Statics)
(3) EG 110 (Drafting Fundamentals)
(2) ENGL 101 (English Composition I)
(5) MA 150 (Mathematics for Technology)†
(1) ENGL 185 (Developmental Reading)

(16)

Second Semester

(2) MET 204 (Production Drawing)
(4) MET 211 (Applied Strength of Materials)
(2) MET 335 (Basic Machining)‡
(3) GNT 220 (Technical Report Writing)
(3) MA 221 (Calculus for Technology I)
(3) COM 114 (Fundamentals of Speech Communication)

(17)

SOPHOMORE YEAR

Third Semester

(3) MET 200 (Power Systems)
(4) MET 216 (Machine Elements)
(3) MA 222 (Calculus for Technology II)
(4) PHYS 220 (General Physics)
(3) Technical elective

(17)

Fourth Semester

(3) MET 330 (Hydraulic and Pneumatic Systems)‡
(3) IS 252 (Human Relations in Industry)
(4) PHYS 221 (General Physics)
(3) Technical elective
(3) Nontechnical elective

(16)

* Also offered at Eastern Indiana Center in Richmond.
† See mathematics footnote, p. 8.
‡ North Central students will take these courses at Calumet.

MENTAL HEALTH TECHNOLOGY

Offered at: Fort Wayne.

This program provides a new entry for those interested in working in the field of mental health. The curriculum is a combination of general education, specialized courses in areas directly related to mental health, and supervised experience in mental hospitals, clinics, homes for the retarded, and other community mental health settings.

The two years of intensive study and work are designed to develop both a basic understanding of the field and desirable attitudes and skills in persons who will work closely with the emotionally disturbed and/or retarded.

Graduates will work with professionals in the mental health field to help organize and carry out a variety of treatment programs, such as activities programs, educational programs, group therapy, work therapy, and others.

This program could also provide a stepping-stone for students who become interested in more advanced degrees in one of the mental health professions.

FRESHMAN YEAR

First Semester

(2) BIOL 201 (Biology of Man)
(1) BIOL 202 (Laboratory in Human Biology)
(3) PSY 120 (Elementary Psychology)
(2) ENGL 101 (English Composition I)
(2) MHT 110 (Group Dynamics I)
(4) MHT 100 (Introduction to Mental Health)

(14)

Second Semester

(2) BIOL 203 (Biology of Man)
(1) BIOL 204 (Laboratory in Human Biology)
(3) PSY 235 (Child Psychology)
(3) SOC 100 (Introductory Sociology)
(2) MHT 111 (Group Dynamics II)
(4) MHT 101 (The Case Study Method)

(15)

Summer Session (Special Extended Period)

(1) MHT 105 (Practicum Work with Emotionally Disturbed)

SOPHOMORE YEAR

Third Semester

(3) SOC 220 (Social Problems)
(3) PSY 350 (Abnormal Psychology)
(2) MHT 210 (Group Dynamics III)
(4) MHT 200 (Activity Therapies)
(3) Elective

(15)

Fourth Semester

(3) PSY 340 (General Social Psychology)
(3) PSY 532 (Psychology for the Exceptional Child)
(2) MHT 211 (Group Dynamics IV)
(5) MHT 201 (Learning Theory and Behavioral Modification)
(3) MHT 298 (Seminar in Mental Health)

(16)

METALLURGICAL ENGINEERING TECHNOLOGY

Offered at: Calumet.

This curriculum is provided for high school graduates who are interested in following a career in a field which is fundamental to all achievements in engineering in our metals oriented civilization. The scarcity of trained technicians to assist senior engineers and scientists in the development of new materials and the modification of old ones to new applications has afforded graduates of this course unusual opportunities for growth and advancement. While directly concerned with metallic materials, basic concepts applicable to other engineering materials such as plastics and ceramics are part of the subject matter covered in this course.

The curriculum includes instruction in mathematics, physics, and chemistry which are basic to the courses in metallurgy. The latter are oriented toward giving the student a grasp of the physical and chemical bases for the behavior and properties of metals and alloys. Courses in humanities are included to enhance the broader educational aspects of this training.

Metallurgical engineering technology prepares students for employment in steel mills, metal processing and fabricating plants, and the technical servicing of these products along the line of distribution to the ultimate consumer.

FRESHMAN YEAR

First Semester

(4) CHM 109 (General Chemistry)
(2) MTT 280 (Nonferrous Metallurgy)
(3) ENGL 104 (English Composition I)
(5) MA 150 (Mathematics for Technology)*
(4) GNT 136 (Physics: Mechanics and Heat)

(18)

Second Semester

(4) CHT 212 (Industrial Chemistry: Qualitative)
(3) MTT 184 (Ferrous Metallurgy)
(3) EG 110 (Drafting Fundamentals)
(3) MA 221 (Calculus for Technology I)
(4) GNT 176 (Physics: Electricity, Sound, and Light)

(17)

SOPHOMORE YEAR

Third Semester

(4) MTT 228 (Physical Metallurgy)
(4) CHT 252 (Industrial Chemistry: Quantitative)
(3) MTT 240 (Heat Transfer and Thermodynamics)
(3) MA 222 (Calculus for Technology II)
(3) COM 114 (Fundamentals of Speech Communication)

(17)

Fourth Semester

(4) MTT 229 (Physical Metallurgy II)
(3) MTT 284 (Metallography)
(3) CPT 300 (Computer Utilization)
(3) ECON 210 (Principles of Economics)
(3) GNT 220 (Technical Report Writing)
(3) IS 252 (Human Relations in Industry)

(19)

* See mathematics footnote, p. 8.

NURSING

Offered at: All campuses.

This program of nursing education provides a means of correlating the philosophy and standards of nursing education with those of general education. The over-all standards and policies of the University apply to the program in nursing as they do to the other educational programs within the University. There are two options available in this program.

The associate degree program is designed to fulfill the educational needs of qualified high school graduates who want to prepare for nursing in a relatively short time and study in a multi-purpose collegiate institution where they share the responsibilities, privileges, and intellectual and social experiences with all other students. Clinical practice experiences are obtained in nearby cooperating hospitals. The University nursing faculty selects, guides, and evaluates all learning experiences.

Graduates are prepared to give care to patients as beginning general duty nurses, drawing upon their scientific knowledge and understanding of human behavior and needs. They are prepared to develop satisfactory relationships with people, to cooperate and share responsibility for their patients' welfare with other members of the nursing and health staff, and to be self-directive in learning from experience as practicing nurses.

Graduates of the associate degree program in nursing are eligible for state examinations for licensure as registered nurses.

All nursing courses must be taken in sequence.

FRESHMAN YEAR

First Semester

(2) BIOL 201 (Biology of Man)
(1) BIOL 202 (Laboratory in Human Biology)
(3) CHM 107 (General Chemistry) or CHM 119 (General Chemistry)
(3) PSY 120 (Elementary Psychology)
(2) ENGL 101 (English Composition I)*
(6) NT 115 Nursing I (Introduction to Nursing)

(17)

Second Semester

(2) BIOL 203 (Biology of Man)
(1) BIOL 204 (Laboratory in Human Biology)
(3) CHM 118 (General Chemistry)†
(2) ENGL 102 (English Composition II)*
(3) PCOL 201 (Pharmacology)
(6) NT 116 Nursing II (Medical-Surgical Nursing of Adults and Children)

(17)

* Required at Lafayette. ENGL 104 at the Calumet, Fort Wayne, and North Central campuses.

† CHM 118 required at Lafayette campus only.

SOPHOMORE YEAR

Third Semester

(3) BIOL 220 (Introduction to Microbiology)
(3) F&N 303 (Essentials of Nutrition)
(10) NT 224 Nursing III (Medical-Surgical Nursing of Adults and Children)

(16)

Fourth Semester

(3) NT 280 (Issues in Nursing)
(5) NT 225 (Maternal Child Health Nursing)
(5) NT 240 (Psychiatric Mental Health Nursing)
(3) SOC 100 (Introductory Sociology)

(16)

POLLUTION CONTROL TECHNOLOGY

The control of pollution in our air and water is becoming an increasingly serious problem. As increased attention is given to this problem, increased technical manpower is required. This curriculum is designed to prepare pollution control technicians for employment in the fields of water and wastewater treatment, air pollution control, and solid waste disposal.

Graduates are needed by local, state, and federal governments; manufacturing industries; and consulting sanitary engineers. Some of the job opportunities include research and development technician, sales and service technician, treatment plant operator, regulatory inspector, and design and construction technician.

FRESHMAN YEAR

First Semester		Second Semester	
(2)	PCT 110 (Introduction to Pollution Control)	(4)	CHM 110 (General Chemistry with Qualitative Analysis)
(4)	CHM 109 (General Chemistry)	(3)	BIOL 220 (Introduction to Microbiology)
(5)	MA 150 (Mathematics for Technology)*	(4)	PHYS 220 (General Physics)
(1)	MET 100 (Applied Engineering Computations)	(3)	EG 110 (Drafting Fundamentals)
(2)	ENGL 101 (English Composition I)	(3)	SOC 100 (Introductory Sociology)
(3)	CET 104 (Elementary Surveying)		
(17)		(17)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(4)	PCT 210 (Sanitary Chemistry and Biology)	(3)	PCT 221 (Air Pollution Control)
(4)	PCT 220 (Water Supply Operations)	(2)	PCT 222 (Solid Waste Disposal)
(3)	CET 253 (Hydraulics and Drainage)	(4)	PCT 223 (Wastewater Treatment)
(4)	PHYS 221 (General Physics)	(2)	ART 276 (Specifications and Contract Documents)
(3)	COM 114 (Fundamentals of Speech Communication)	(3)	GNT 220 (Technical Report Writing)
		(3)	Elective
(18)		(17)	

* See mathematics footnote, p. 8.

BACHELOR OF SCIENCE DEGREE FOR ASSOCIATE DEGREE GRADUATES

The Bachelor of Science degree awarded under the School of Technology's "2 + 2" education plan is unique. A student following this plan earns first an associate degree in two years and then a Bachelor of Science degree in two more years.

A student is awarded an Associate in Applied Science degree upon successful completion of the two-year technician program. The associate degree signifies that the recipient is educated at the technician's level and is "job-ready." Thus, individuals may go directly into well-paying jobs, or they may elect to continue study.

A student who desires to continue his formal education may be admitted to a two-year "add-on" technologist's program. A student who successfully completes this program is awarded a Bachelor of Science degree. This provides the background for increased job responsibility. Eight options are available to qualified students.

Options

Computer—for graduates of the computer technology associate degree program. (See p. 42).

Construction—for graduates of architectural technology or civil engineering technology associate degree programs. (See p. 43)

Electrical—for graduate of the electrical engineering technology associate degree program. (See p. 44)

Industrial—for graduates of the industrial engineering technology associate degree program. (See p. 45)

Mechanical—for graduates of mechanical engineering technology associate degree program. (see p. 46)

Nursing—for graduates of nursing associate degree programs or those holding diplomas in nursing. (See p. 47)

Supervision Technology—for graduates of any associate degree program. (See p. 50)

Technology Teaching—for graduates of any technical associate degree program. (See p. 51)

Admission Requirements

Applicants for admission to any of these options must have earned an associate degree or equivalent in one of the technologies. Transfer students will be admitted to Purdue University according to standard procedures.

Graduation Requirements

The technician who pursues a Bachelor of Science degree will follow a plan of study which includes a minimum of 67 semester credit hours beyond the associate degree. Students transferring from other institutions must complete at least 32 semester credit hours of course work in residence in the third and fourth year of the Bachelor of Science degree program.

BACHELOR OF SCIENCE DEGREE
COMPUTER TECHNOLOGY

Offered at: Indianapolis.

This baccalaureate program is a two-year "add-on" curriculum which is open to associate degree graduates of computer technology, either commercial or technical option.

The program builds on the student's knowledge of computer programming acquired in the first two years and emphasizes the practical aspects of computer systems design and commercial systems analysis. The inclusion of many elective courses enables the students to pursue areas of special interest.

Graduates are prepared to fill a variety of positions related to data processing, computer systems, and computer programming.

JUNIOR YEAR*

Fifth Semester		Sixth Semester	
(3)	CPT 340 (Data Communications)	(3)	CPT 354 (Management Information Systems)
(6-7)	Option courses (2)	(3)	CPT 360 (Compiler Languages)
(3)	Communication elective	(6-7)	Option Courses (2)
(3)	Social science elective	(3)	Social science elective
(15-16)		(15-16)	

SENIOR YEAR

Seventh Semester		Eighth Semester	
(3)	CPT 386 (Computer Operating Systems II)	(3)	CPT 480 (Computer Systems Planning)
(3)	INDM 360 (Production Management)	(3)	CS 580 (Design of Data Processing Systems)
(3)	Business elective†	(3)	Business elective†
(3)	Humanities elective	(3)	Humanities elective
(6)	Electives	(6)	Electives
(18)		(18)	

OPTION COURSES

Graduates of the commercial option take MA 221, 222, and science electives (eight credits).

Graduates of the technical option take CPT 254, 286, INDM 200, and 202. CPT 265 is also required, but should have been taken as an elective in the sophomore year.

* Freshman and sophomore years on p. 28.

† Recommended business electives: INDM 300, 420, 430, 450, 583; IS 374.

BACHELOR OF SCIENCE DEGREE
CONSTRUCTION TECHNOLOGY

Offered at: Calumet, Indianapolis.*

This baccalaureate program is open to students with the degree of Associate in Architectural Technology, Civil Engineering Technology, or the equivalent. It is an extension of the associate degree program with emphasis on the principles and practices of construction, further development of the technical courses of the associate degree program, an introduction to the principles of business and management, and additional training in written and verbal communications.

Graduates of the program find employment with contractors, architects, consulting engineers, building product companies, or governmental organizations. Experienced graduates may be employed in a wide variety of occupational areas such as: contracting, detailing, drafting, estimating, inspecting, merchandising, supervising, and testing. This curriculum is not designed to prepare students for registration as professional architects or engineers.

JUNIOR YEAR†

Fifth Semester		Sixth Semester	
(3)	ART 322 (Architectural Drafting) or CET 309 (Subdivision Planning)	(3)	CET 344 (Construction Inspection)
(3)	CPT 200 (Computer Programming Fundamentals)	(2)	CPT 345 (Computer Graphics)
(3)	IET 250 (Fundamentals of Production Cost Analysis)	(3)	IS 374 (Industrial Supervision)
(3)	Nontechnical elective	(3)	Nontechnical elective
(3)	Technical elective	(3)	Technical elective
(2)	Elective	(3)	Elective
(17)		(17)	

Summer Session

(1) ART 390 (Construction Field Problem)

SENIOR YEAR

Seventh Semester		Eighth Semester	
(3)	CET 441 (Construction Methods)	(3)	ART 476 (Specifications)
(3)	IS 368 (Legislation Affecting Industrial Relations)	(3)	INDM 583 (Small Business Management)
(3)	ENGL 421 (Business Writing: Engineering Applications)	(3)	COM 415 (Discussion of Technical Problems)
(3)	COM 315 (Speech Communication of Technological Information)	(3)	Technical elective
(3)	Technical elective	(3)	Elective
(2)	Elective		
(17)		(15)	

TECHNICAL ELECTIVES

For architectural technology graduates: ART 360, 362, 490 (6 hours)

For civil engineering technology graduates: ART 364, CET 386, 431, 442.

* Limited program at Fort Wayne

† Freshman and sophomore years on p. 21, or p. 27.

BACHELOR OF SCIENCE DEGREE
ELECTRICAL TECHNOLOGY

Offered at: Calumet, Fort Wayne, Indianapolis, Lafayette.

The student who completes the plan of study and receives the degree of Associate in Applied Science is eligible to enter the following Bachelor of Science program. This B.S. degree program prepares the student for positions as technologists in manufacturing industries. The plan provides additional study in electrical engineering technology and courses that provide the background of related technical and nontechnical topics which are essential in modern industry.

JUNIOR YEAR*

Fifth Semester

(3) EET 321 (Generation and Distribution of Electrical Power)
(4) MET 412 (Mechanics and Materials)
(3) STAT 401 (Elementary Statistical Methods I)
(4) CHM 115 (General Chemistry)
(1) ENGL 185 (Developmental Reading)
(3) Nontechnical elective

(18)

Sixth Semester

(3) EET 383 (Advanced Electrical Networks)
(3) MET 200 (Power Systems)
(4) IET 224 (Production Planning and Control)
(3) CPT 200 (Computer Programming Fundamentals)
(3) ENGL 421 (Business Writing, Engineering Applications)

(16)

SENIOR YEAR

Seventh Semester

(3) EET 362 (Automatic Control Systems)
(4) MET 216 (Machine Elements)
(3) MET 300 (Applied Thermodynamics) or
MET 335 (Basic Machining)
(3) ECON 210 (Principles of Economics)
(3) COM 315 (Speech Communication of Technical Information)
(2) ENGL 590 (Directed Writing)

(18)

Eighth Semester

(3) EET 499 (Electrical Engineering Technology)
(3) EET elective
(3) IS 374 (Industrial Supervision)
(3) IET 250 (Fundamentals of Production Cost Analysis)
(3) COM 415 (Discussion of Technical Problems)
(3) Nontechnical elective

(18)

* Freshman and sophomore years on p. 29.

BACHELOR OF SCIENCE DEGREE
INDUSTRIAL ENGINEERING TECHNOLOGY

Offered at: Calumet, Fort Wayne, Indianapolis.

The plan of study provides for the broadening of the industrial engineering technology associate degree graduate in communications, interpersonal relations, supervision techniques, and associated technical areas.

This baccalaureate program prepares graduates to fill technical positions in industrial engineering departments of manufacturing and production industries.

Utilizing the relevant procedures and standards established by industrial engineers, the industrial engineering technologists thus will implement the systems designed by the industrial engineer.

JUNIOR YEAR*

Fifth Semester

(3) MA 221 (Calculus for Technology I)
(3) IET 312 (Materials Handling)
(3) MET 384 (Instrumentation)
(3) EET 216 (Electrical Machines and Controls)
(1) ENGL 185 (Developmental Reading)
(3) English elective
(2) IS 331 (Industrial Safety)

(18)

Sixth Semester

(3) MA 222 (Calculus for Technology II)
(3) IET 301 (Cost Evaluation and Control)
(2) MET 380 (Materials and Processes)
(3) MET 330 (Introduction to Fluid Power)
(3) IS 368 (Legislation Affecting Industrial Relations)
(3) ENGL 421 (Business Writing: Engineering Applications)

(17)

SENIOR YEAR

Seventh Semester

(2) IET 354 (Attribute and Variable Sampling)
(3) MET 400 (Power Systems)
(4) MET 412 (Mechanics of Materials)
(3) IS 356 (Personal Problems)
(3) COM 315 (Speech Communication of Technological Information)
(3) General education elective

(18)

Eighth Semester

(3) IET 364 (Total Quality Control)
(3) IET 497 (Senior Project)
(3) COM 415 (Discussion of Technical Problems)
(3) IS374 (Industrial Supervision)
(3) General education elective

(15)

* Freshman and sophomore years on p. 32.

BACHELOR OF SCIENCE DEGREE
MECHANICAL TECHNOLOGY

Offered at: Calumet, Fort Wayne, Indianapolis, Lafayette.

Graduates of the two year mechanical engineering technology program are eligible for admission to this two year "add-on" curriculum.

This baccalaureate program prepares graduates to fill technical positions in manufacturing and production industries such as production supervisor, plant engineer, and tool engineer technologist.

With a detailed knowledge of the relevant practices, procedures, and codes established by engineers, technologists thus will become key employees in transforming from concept to reality a device or system conceived in the mind of and designed by the engineer.

The plan of study provides for the broadening of the associate degree graduate in communications, interpersonal relations, supervision techniques, and associated technical areas.

JUNIOR YEAR*

Fifth Semester

(3) CPT 200 (Computer Programming Fundamentals)
(3) ECON 210 (Principles of Economics)
(3) EET 216 (Electrical Machines and Controls)
(3) ENGL 421 (Business Writing: Engineering Applications)
(3) Interdisciplinary elective
(3) Mechanical engineering technology elective

(18)

Sixth Semester

(3) IET 250 (Fundamentals of Production Cost Analysis)
(3) Interdisciplinary elective
(3) Interdisciplinary elective
(3) IS 374 (Industrial Supervision)
(3) Mechanical engineering technology elective

(15)

SENIOR YEAR

Seventh Semester

(3) COM 315 (Speech Communication of Technical Information)
(3) English elective
(3) Humanities elective
(3) Interdisciplinary elective
(3) Mechanical engineering technology elective
(3) STAT 401 (Elementary Statistical Methods)

(18)

Eighth Semester

(3) COM 415 (Discussion of Technical Problems)
(3) Humanities elective
(3) Interdisciplinary elective
(3) MET 497 (Senior Project)
(3) Mechanical engineering technology elective
(3) Supervision elective

(18)

* Freshman and sophomore years on p. 37.

BACHELOR OF SCIENCE DEGREE
NURSING

Offered at: Calumet, Lafayette.

The baccalaureate degree program is designed to prepare registered nurses for first level leadership positions in nursing through an upper-division, undergraduate curriculum in nursing leading to the Bachelor of Science degree. It is primarily for graduates of two-year college-level associate degree programs in nursing who have changed their career objectives.

Graduates of the program are qualified for leadership roles in such areas as community health nursing, school nursing, industrial nursing, and similar fields, as well as in hospitals.

All nursing courses must be taken in sequence.

JUNIOR YEAR

Fifth Semester

(3) COM 114 (Fundamentals of Speech Communication)
(3) English composition or literature
(3) PSY 340 (General Social Psychology) or
SOC 350 (Marriage and Family Relationships) or
SOC 553 (The Sociology of the Family)
(3) Elective
(5) NT 310 (Family and Community Nursing I)

(17)

Sixth Semester

(3) COM 320 (Group Discussion and Conference Leadership) or
COM 315 (Speech Communication of Technical Information)
(3) PSY 311 (Motivation and Learning)
(2) ED 419 (The Teaching of Health and Safety) or
H&S 380 (First Aid and Safety)
(3) Elective
(5) NT 320 (Family and Community Nursing II)

(16)

SENIOR YEAR

Seventh Semester

(3) ENGL 304 (Advanced Composition)
(3) IS 240 (Labor Relations Problems)
(3) Sociology elective
(3) Elective
(5) NT 410 (Nursing Leadership)

(17)

Eighth Semester

(3) IS 356 (Personnel Problems in Industry) or
IS 374 (Industrial Supervision)
(3) PSY 500 (Statistical Methods Applied to Psychology, Education, and Sociology)
(3) CPT 300 (Introduction to Computers)
(3) Elective
(5) NT 420 (Nursing Management)

(17)

BACHELOR OF SCIENCE DEGREE FOR PROFESSIONAL PILOTS

Offered at: Lafayette.

The professional pilot technology curriculum provides two years of advanced, airline-oriented training for selected graduates of the two-year general aviation flight technology curriculum. This program enables the student to progress into larger, higher performance aircraft and to continue with both aviation and nonaviation general studies toward the Bachelor of Science program.

A very limited number of persons, other than graduates of general aviation flight technology, who comply with the proper academic and flight experience requirements may be admitted with advanced standing on a space-available basis.

This program of study combines regular classroom courses with advanced flight crew training on Purdue Airlines transport aircraft. A Federal Aviation Administration approved flight engineer training program is an integral part of the curriculum.

The training provides the student with the knowledge and experience necessary to qualify him as a copilot or flight engineer with a scheduled air carrier or an executive pilot with a multi-engine equipment capability.

Students are eligible to apply for scholarships made available through Purdue Airlines during their last year in the program.

Note: The DC-3 and DC-6 aircraft have been replaced with DC-9 jet aircraft. A curriculum revision reflecting these changes is now in progress but will not be completed in time for this publication.

JUNIOR YEAR

Fifth Semester

(3) CHM 113 (Introductory Chemistry)
(2) BIOL 201 (Biology of Man)
(3) INDM 470 (Transportation Management)
(4) AT 321 (Airways Procedures I)
(1) AT 325 (Airline Operations)
(3) Elective

(16)

Sixth Semester

(3) CHM 114 (Introductory Chemistry)
(2) BIOL 203 (Biology of Man)
(3) ECON 210 (Principles of Economics) or
ECON 185 (American Economic Development)
(2) AT 322 (Airways Procedures II)
(3) AT 323 (Advanced Navigation)
(2) AT 328 (DC-3 Aircraft and Engine Familiarization)
(3) Elective

(18)

Summer Session*

(1) AT 400 (DC-3 Flight Transition)
(3) AT 401 (DC-3 Flight I)
(2) AT 404 (Flight Planning and Management I)
(2) AT 407 (Operations Lab. I)
(1) AT 424 (DC-6B Aircraft and Engine Familiarization I)
(1) AT 425 (DC-6B Trainer I)
(1) AT 414 (DC-6B Flight Engineering I)
(5) AT 415 (DC-6B Normal and Emergency Operations)
(1) AT 420 (Airways Procedures III)

(17)

SENIOR YEAR

Seventh Semester

(3) AT 402 (DC-3 Flight II)
(2) AT 405 (Flight Planning and Management II)
(2) AT 408 (Operations Laboratory II)
(6) AT 426 (DC-6B Aircraft and Engine Familiarization II)
(1) AT 427 (DC-6B Trainer II)
(1) AT 417 (DC-6B Flight Engineering II)
(3) AT 418 (Flight Engineering Procedures I)
(1) AT 421 (Airways Procedures IV)

(19)

Eighth Semester

(3) AT 403 (DC-3 Flight III)
(2) AT 406 (Flight Planning and Management III)
(2) AT 409 (Operations Laboratory III)
(2) AT 410 (Airline Transport Procedures)
(1) AT 419 (DC-6B Flight Engineering III)
(1) AT 422 (Airways Procedures V)
(3) AT 423 (Flight Engineering Procedures II)
(1) AT 428 (DC-6B Trainer III)

(15)

* The special summer session extends from the Monday after commencement to the Friday preceding the fall semester. This allows a 14- to 15-week period of training.

BACHELOR OF SCIENCE DEGREE
SUPERVISION TECHNOLOGY OPTION

Offered at: Calumet, Fort Wayne, Indianapolis.

The supervision technology option is administered by the Department of Industrial Supervision.

This option utilizes the technical proficiency for the associate degree and helps prepare the student for a career in the supervision of a technical group. Applicants for admission to the supervision technology option must have earned the degree of Associate in Applied Science in one of the technologies or a comparable degree or diploma. A minimum of 67 hours is required beyond the A.A.S. degree.

The following courses are required in the supervision technology option:

ECON	210	Introduction to Economics
EET	216	Electrical Machines and Controls
ENGL	185	Developmental Reading
ENGL	421	Business Writing: Engineering Applications
CPT	111	Unit Record Data Processing
INDM	200	Introduction to Accounting
INDM	201	Cost Accounting
IS	368	Legislation Affecting Industrial Relations
IS	374	Industrial Supervision
MA	221	Calculus for Technology I
MA	222	Calculus for Technology II
MET	380	Materials and Processes
MET	400	Power Systems
MET	412	Mechanics of Materials
COM	315	Speech Communication of Technical Information
COM	415	Discussion of Technical Problems

In consultation with his counselor from the Department of Industrial Supervision, the student in the supervision technology option may select courses within the following fields of study:

Chemistry
Civil engineering technology
Computer sciences
Computer technology
Economics
Electrical engineering technology
Engineering graphics
Industrial engineering technology
Industrial management
Industrial supervision
Mathematics
Mechanical engineering technology
Physics
Statistics
Courses within the School of Humanities, Social Science, and Education.

DEPARTMENT OF INDUSTRIAL EDUCATION

The Department of Industrial Education consists of two sections: industrial arts and vocational-technical. Each section is concerned with one or more programs and activities designed to equip men and women for entrance into career fields that require an intellectual base upon which practical applications of the knowledge gained in the humanities, the sciences, and the technologies depend. Thus, the courses provided offer a combination of theoretical and practical education.

Graduate and undergraduate programs which prepare students for entrance into a variety of careers in education, government, and industry are available. Students may elect to pursue a major which will lead to the degree of Bachelor of Science in Industrial Education with a specialty in one of the following areas:

1. Industrial arts teaching
2. Technology teaching
3. Vocational-industrial teaching

The Nature of Industrial Education

Industrial education prepares people for work and living in the industrial society. Public schools offer instruction in this field under the general classifications of industrial arts and vocational-industrial education. Vocational-technical schools offer industrial education opportunity with emphasis on occupational preparation. Industry, business, and government have become involved in and committed to programs of industrial education and training.

Industrial Arts Teaching

Industrial arts, as a subject in public schools, deals with industrial aspects of our culture, emphasizing tools, materials, processes, and products of contemporary American industry. Problems of industrial production, planning, and marketing are considered from the viewpoints of labor, management, and the consumer. Social problems related to industrial production and to technological change are integral parts of the subject matter of industrial arts. A part of the formal program of general education, industrial arts is most often included in the junior and senior high school curricula.

Excellent employment opportunities have been consistently available to Purdue graduates in industrial arts teaching. The demand for industrial arts teachers continues to exceed the number of qualified graduates.

Technology Teaching

The scientific and technological revolutions currently underway have created an increasing number of new engineering-related occupations in which the workers often are called technicians. The establishment and refinement of these occupations demand a kind of teacher who also is new to the scene. The Department of Industrial Education offers a major, technology teaching, designed to prepare students to become instructors of technical subjects in post-high school, industrial-technical curricula. Entry into this program of teacher education is based upon completion of a two-year college level,

technical program leading to a degree comparable to Purdue's Associate in Applied Science.

Formal technical training, work experience, professional courses, general studies, and advanced technical preparation are considered necessary for teachers in technological specialties. The technology teaching major requires a balance of these components within a 131-semester-hour program of undergraduate study.

Vocational-Industrial Teaching

Vocational-industrial teaching, also known as trade and industrial teaching, is a part of the total Indiana program of vocational education. Vocational-industrial teachers must be occupationally competent in one of the many skilled and technical crafts found in industry in the United States. In order to qualify for the vocational teaching license, the student must have completed at least three years of work above the learner level in a craft, skilled trade, or some other type of industrial occupation, plus the general and professional education courses specified by the Teacher Training and Licensing Commission of the State Board of Education. The plan of study, when completed, qualifies the student for a provisional trade and industrial education teacher license.

A qualified graduate may find employment in day-trade vocational programs in a public high school, in an area vocational-technical center, or in one of a variety of institutions (including private) which are coming into prominence. He may serve as either a craft or occupational instructor or as a teacher of related subjects. He may, in addition, be called upon to teach apprentices or workers who attend part-time or evening-school classes. By completing one additional specified course he may be certified as a cooperative vocational education coordinator. Increasingly, demands are made upon the qualified vocational-industrial teacher to help adults to prepare themselves for work in occupations with which they are not familiar and in which there are shortages of trained workers.

Student Organizations

Two student organizations are associated with the Department of Industrial Education. Both the Mu Chapter of Iota Lambda Sigma and the Industrial Arts Education Club are affiliates of national organizations serving industrial education.

Iota Lambda Sigma, the honorary fraternity in industrial education, selects students for membership on the basis of scholastic achievement, character, and potential for leadership in industrial education. The fraternity membership includes college and university students in addition to persons engaged in teaching, research, supervision, and administration in some phase of industrial education.

Membership in the Industrial Arts Club is open to all students majoring in industrial arts teaching. Outside speakers, industrial tours, and discussion groups are arranged by the student leadership of the club to provide programs designed to help members broaden their understanding of industrial arts education.

Graduate Study in Industrial Education

Graduate programs in industrial education are offered to further the professional development of selected industrial education teachers, administrators, and other qualified individuals. A major aim is to produce leaders competent to plan, organize, conduct, supervise, or direct industrial education and training programs in a wide variety of educational and organizational settings. Another prime objective is that of helping people to become scholars and research specialists in this field. Graduate plans of study may be designed which relate to a broad array of vocational objectives and options, depending upon the particular interests and background of the candidate.

The Department of Industrial Education provides courses and directs research leading to the M.S. and Ph.D. degrees. Special programs of graduate study may be designed for persons who do not have an advanced degree objective but who are concerned about improving their professional qualifications or meeting advanced certification requirements. Such programs are currently available which meet the certification requirements for industrial cooperative education coordinators and for supervisors of trade and industrial education.

Admission to the Graduate School may be granted to graduates of Purdue University or of any other accredited institution. Persons accepted to do advanced study in industrial education must present adequate undergraduate preparation and experience to make graduate study a profitable undertaking.

Persons interested in specific information about advanced work in industrial education may contact the Department of Industrial Education directly. Further information about graduate study, application blanks, and the bulletin of the school may be obtained by writing to: Dean of the Graduate School, Graduate House, Purdue University, Lafayette, Indiana 47907.

BACHELOR OF SCIENCE DEGREE IN INDUSTRIAL EDUCATION

Each student's program will be based on the major which he has selected. Modifications may be made from time to time to fit individual needs, but in the main the plans of study outlined below will apply in each case.

Purdue University has been designated by the State Board for Vocational Education as a teacher-training institution in vocational trade and industrial education in accordance with the provisions of the federal vocational educational acts. The various industrial education options fulfill the professional training requirements specified by the Indiana State Teacher Training and Licensing Commission for teaching certificates in the field of industrial education.

In order to qualify for the degree of Bachelor of Science in Industrial Education the student must:

1. Complete the curriculum requirements in industrial education as listed in the plans of study which follow, with a selection of electives appropriate to a major area of specialization;
2. Complete at least 128 semester hours of course work; and
3. Present evidence of industrial work experience when such is required in certain curricula.

Industrial Arts Teaching

Offered at: All campuses. (Complete program at Lafayette only; transfer to Lafayette campus recommended after freshman year.)

Prospective teachers of industrial arts study a broad core program of general education subjects essential for all teachers. In addition they develop technical competencies which will enable them to present effective instruction covering a broad range of industrial tools, materials, and processes. They complete a sequence of professional education courses including study of the American school system, educational psychology, methods of teaching organization of instructional materials, and student teaching. Industrial arts teacher education at Purdue University also offers the individual student an opportunity to acquire a degree of specialization in one or more of the technical subject areas.

FRESHMAN YEAR

First Semester		Second Semester	
(2)	ENGL 101 (English Composition I)	(2)	ENGL 102 (English Composition II)
(3)	MA 153 (Algebra and Trigonometry I)	(3)	MA 154 (Algebra and Trigonometry II)
(3)	PSY 120 (Elementary Psychology)	(3)	IED 210 (Foundation of Industrial Arts)
(1)	IED 110 (Introduction to Industrial Education)	(4)	IED 217 (Wood Technics)
(3)	IED 211 (Industrial Arts Materials and Processes)	(3)	Elective
(2)	EG 114 (Drafting I)		
(14)		(15)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(3)	COM 114 (Fundamentals of Speech Communication)	(4)	IED 242 (Electrical Fundamentals for Teachers)
(3)	CHM 113 (Introductory Chemistry)	(3)	ECON 185 (American Economic Development) or ECON 210 (Principles of Economics)
(3)	SOC 100 (Introduction to Sociology)	(3)	IED 220 (Contemporary American Industry)
(2)	EG 115 (Drafting II)	(3)	Philosophy selective
(4)	IED 245 (General Metals)	(3)	Elective
(1)	General education electives		
(16)		(16)	

JUNIOR YEAR

Fifth Semester		Sixth Semester	
(4)	IED 344 (Graphic Arts Fundamentals)	(3)	IED 310 (Management of Industrial Arts Laboratories)
(4)	MET 326 (Introduction to Power)	(3)	ED 285 (Educational Psychology)
(3)	PHYS 210 (Nature of Physical Science I)	(3)	CHM 114 (Introductory Chemistry) or PHYS 211 (Nature of Physical Science II)
(3)	Humanities elective	(3)	Technical elective
(3)	Social and behavioral science elective	(3)	Humanities elective
(17)		(15)	

SENIOR YEAR

Seventh Semester		Eighth Semester	
(3)	IED 411 (Industrial Design)	(3)	ED 502 (American School System)
(2)	ED 304 (Principles of Teaching)	(3)	ED 460 (Special Methods of Teaching)
(6)	Technical elective	(6)	ED 464 (Supervised Teaching)
(3)	Social and behavioral science elective	(3)	ED 469 (Organization of Instruction Materials)
(3)	General education elective	(3)	IED 481 (Comprehensive General Shop)
(17)		(18)	

Technology Teaching

Offered at: All campuses. (Complete program at Lafayette only.)

Graduates of this major will be equipped to teach future technicians who will serve principally as assistants to scientists and engineers. Degree requirements have been established in line with the basic qualifications necessary for effective teaching performance. The program will provide a sound base for professional growth of career teachers in chemical, civil, electrical and electronic, industrial, mechanical, and other technologies.

Only selected graduates from accredited two-year, college-level, technician-training programs are eligible for admission to the major. Transfer students are given credit for appropriate courses satisfactorily completed in the two-year institution. As much as 78 semester hours transfer credit may be applied toward the course requirements for graduation, including general studies, mathematics, science, electives, and technical credits.

FRESHMAN YEAR

First Semester		Second Semester	
(2)	ENGL 101 (English Composition)	(2)	ENGL 102 (English Composition)
(3)	SOC 100 (Introduction to Sociology)	(3)	PSY 120 (Elementary Psychology)
(3)	MA 153 (Algebra and Trigonometry I)	(3)	MA 154 (Algebra and Trigonometry II)
(1)	IED 110 (Introduction to Industrial Education)	(9)	Technical specialty credit
(6)	Technical specialty credit		
(15)		(14)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(3)	PHYS 210 (Nature of Physical Science) or CHM 113 (Introductory Chemistry)	(3)	PHYS 211 (Nature of Physical Science) or CHM 114 (Introductory Chemistry)
(3)	MA 223 (Introductory Analysis I)	(3)	COM 114 (Fundamentals of Speech Communication)
(9)	Technical specialty credit	(9)	Technical specialty credit
(15)		(15)	

JUNIOR YEAR

Fifth Semester		Sixth Semester	
(3)	IED 260 (Principles and Objectives of Industrial Education)	(2)	ED 304 (Principles of Teaching)
(3)	ED 285 (Educational Psychology)	(3)	ECON 185 (American Economic Development) or ECON 210 (Principles of Economics)
(3)	PHIL 110 (Introduction to Philosophy) or PHIL 150 (Principles of Logic)	(3)	Social and behavioral science elective
(4)	Humanities Elective	(2)	General education elective
(3)	Advanced technical elective*	(2)	Elective
		(3)	Advanced technical elective
(16)		(15)	

(Cooperative Year)

Seventh Semester		Eighth Semester	
(5)	IED 362 (Cooperative Occupational Internship)	(5)	IED 362 (Cooperative Occupational Internship)†

SENIOR YEAR

Ninth Semester		Tenth Semester	
(3)	IED 375 (Teaching Methods in Occupational Education) or ED 460 (Special Methods of Teaching Industrial Education Subjects)	(3)	IED 510 (Course Construction in Vocational-Industrial-Technical Education)
(3)	IED 444 (Occupational Analysis for Curriculum Planning)	(3)	IED 467 (School Shop Management)
(3)	General education elective	(3)	ED 502 (The American School System)
(2)	Social and behavioral science elective	(6)	ED 464 (Supervised Teaching in Industrial Education Subjects)
(3)	Advanced technical elective		
(2)	Humanities elective		
(16)		(15)	

* A minimum of nine semester hours technical coursework beyond the associate degree will be selected from upper-division School of Technology and other offerings of the University.

† IED 462 (Appraisal of Occupational Experience and Competence) may be substituted.

Vocational-Industrial Teaching

Offered at: All campuses. (Complete program at Lafayette only.)

The prime purpose of this plan of study is to prepare individuals as teachers of vocational-industrial-technical subjects. Certification procedures require that such teachers be competent in the particular trade or occupation for which they are certified. Competency must be verified in terms of past occupational experience (usually three years beyond the learner level) or by controlled experience gained in a cooperative plan which is offered as an integral part of an undergraduate curriculum. Thus, there are two tracks to this plan of study. One track involves "demonstrated trade competency" based upon past occupational experience for which the student may be granted up to 32 semester hours of credit toward his degree. This may shorten the time to earn the degree to approximately three years. The other track provides opportunity for the individual to gain his occupational competency through "cooperative occupational internship" as a part of his degree requirement and gain a like amount of credit. This track requires five full calendar years for completion since it includes 30 months with industry.

Persons interested in pursuing either of these plans should consult the department for a full explanation of details and procedures.

FRESHMAN YEAR

First Semester		Second Semester	
(2)	ENGL 101 (English Composition I)	(2)	ENGL 101 (English Composition II)
(3)	MA 153 (Algebra and Trigonometry I)	(3)	MA 154 (Algebra and Trigonometry II)
(1)	IED 110 (Introduction to Industrial Education)	(3)	Social and behavioral sciences elective
(3)	SOC 100 (Introductory Sociology)*	(3)	ECON 185 (American Economic Development) or ECON 210 (Principles of Economics)
(3)	PSY 120 (Elementary Psychology)*	(4)	Technical elective
(4)	Technical elective		
(16)		(15)	

First Summer Session

(3) IED 362 (Cooperative Occupational Internship)†

* Students of junior standing may be required by the department offering the course to take a specified 300-level course.

† IED 462 (Appraisal of Occupational Experience and Competency) may be substituted for IED 362.

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(5)	IED 362 (Cooperative Occupational Internship)*	(3)	CHM 113 (Introductory Chemistry) or PHYS 210 (Nature of Physical Science)
		(3)	IED 260 (Principles and Objectives of Industrial Education)
		(3)	COM 114 (Fundamentals of Speech Communication)
		(3)	General education elective
		(4)	Technical elective
		(16)	

Second Summer Session

(3) IED 362 (Cooperative Occupational Internship)*

JUNIOR YEAR

Fifth Semester		Sixth Semester	
(5)	IED 362 (Cooperative Occupational Internship)*	(3)	CHM 114 (Introductory Chemistry) or PHYS 211 (Nature of Physical Sciences)
		(2)	Social and behavioral science elective
		(3)	PHIL 110 (Introduction to Philosophy) or PHIL 150 (Principles of Logic)
		(3)	ED 285 (Educational Psychology)
		(3)	Humanities elective
		(3)	Elective
		(17)	

Third Summer Session

(3) IED 362 (Cooperative Occupational Internship)*

* IED 462 (Appraisal of Occupational Experience and Competency) may be substituted for IED 362.

COOPERATIVE YEAR

Seventh Semester		Eighth Semester	
(5)	IED 362 (Cooperative Occupational Internship)*	(5)	IED 362 (Cooperative Occupational Internship)*

Fourth Summer Session

(3) IED 362 (Cooperative Occupational Internship)*

SENIOR YEAR

Ninth Semester		Tenth Semester	
(3)	IED 375 (Teaching Methods in Occupational Education)	(6)	ED 464 (Supervised Teaching in Industrial Education Subjects)
(3)	IED 444 (Occupational Analysis for Curriculum Planning)	(3)	ED 502 (The American School System)
(2)	ED 304 (Principles of Teaching)	(3)	IED 510 (Course Construction in Vocational-Industrial-Technical Education)
(3)	General education elective	(3)	IED 467 (School Shop Management)
(2)	Life and physical science elective		
(3)	Humanities elective		
(1)	Elective		
(17)		(15)	

* IED 462 (Appraisal of Occupational Experience and Competency) may be substituted for IED 362.

DEPARTMENT OF INDUSTRIAL SUPERVISION

Undergraduate programs in the Department of Industrial Supervision are designed to prepare students for careers in industrial training and personnel development, general personnel work, and supervisory positions in manufacturing and other industries.

Student Organizations

Associated with the Department of Industrial Supervision is the Purdue University student chapter of the American Society for Training and Development. It is the first and the largest student organization affiliated with this international professional society. Among its major aims are bringing students and practitioners closer together; obtaining and exchanging information about current training experiences, ideas, and methods; and stimulating and maintaining interest in effective, organized training in business, industry, and government. All industrial supervision students are eligible for membership in this chapter.

BACHELOR OF SCIENCE DEGREE

Supervision Major

Offered at: All campuses. (Complete four years at Lafayette, Fort Wayne.)

The student selecting the supervision major may enroll in the regular program of study for this major or he may elect to pursue the major by entering the cooperative education program.

Industrial organizations constantly seek to employ persons who can exercise leadership in a variety of situations. They want to hire individuals who know how to work with people and who can get work done efficiently with maximum satisfaction to all concerned. Management recognizes that its most valuable asset is the people it employs, and supervisors are the vital link between top management and the rest of the employees.

Graduates find employment in many industrial occupations. Many of them are given the opportunity to become junior management trainees and ultimately find themselves placed as industrial supervisors and production foremen. Others may be employed, after a brief orientation period, in such positions as production control specialists, industrial sales representatives, production planners, technical expediters, industrial casualty specialists, quality inspectors, and maintenance supervisors.

FRESHMAN YEAR

First Semester

(3) EG 110 (Drafting Fundamentals)
(2) ENGL 101 (English Composition I)
(3) IED 111 (Introduction to Materials)
(1) IS 100 (Introduction to Industrial Supervision)
(5) MA 150 (Mathematics for Technology)*
(2) Elective

(16)

Second Semester

(2) EG 210 (Industrial Sketching)
(2) ENGL 102 (English Composition II)
(3) PSY 120 (Elementary Psychology)
(3) SOC 100 (Introductory Sociology) or
SOC 312 (American Society)
(2) MET 215 (Welding)
(3) Elective

(15)

SOPHOMORE YEAR

Third Semester

(2) EET 214 (Electricity Fundamentals)
(3) ECON 210 (Principles of Economics)
(3) COM 114 (Fundamentals of Speech Communication)
(2) MET 335 (Industrial Machine Process)
(3) Math/science selective
(3) Elective

(16)

Fourth Semester

(3) IS 374 (Industrial Supervision)
(3) EET 433 (Electronics Fundamentals)
(3) MET 355 (Production Machining)
(3) INDM 200 (Introductory Accounting)
(3) Math/science selective
(3) Elective

(18)

JUNIOR YEAR

Fifth Semester

(3) IS 375 (Basic Methods of Training)
(3) INDM 201 (Cost Accounting)
(2) IS 331 (Industrial Safety)
(3) PHYS 210 (Nature of Physical Science I)
(3) Philosophy selective
(3) Elective

(17)

Sixth Semester

(3) PHYS 211 (Nature of Physical Science II)
(3) PSY 572 (Organizational Psychology)
(3) IE 366 (Production Management)
(3) INDM 431 (Personnel Relations)
(3) CS 210 (Laboratory on Data Processing) or
CPT 200 (Computer Programming Fundamentals)
(3) Elective

(18)

* See mathematics footnote, p. 8.

SENIOR YEAR

Seventh Semester

(3) INDM 430 (Labor Relations)
(3) IE 477 (Work Methods and Measurements)
(3) IS 474 (Conference Leadership Training)
(3) ENGL 420 (Business Writing: General Applications)
(3) Speech selective

(15)

Eighth Semester

(3) IS 574 (Managerial Training and Development)
(3) SOC 516 (Industrial Sociology)
(3) INDM 480 (Elements of Management)
(3) Elective
(3) Elective

(15)

Personnel Major

Offered at: All campuses. (Complete four years at Lafayette, Fort Wayne.)

The personnel major prepares students to enter industry, business, and government agencies and perform various personnel activities, including the training and development of employees and supervisors.

Students are required to complete courses in English, mathematics, physical sciences, social sciences, humanities, and technology. In addition, a number of specialized courses are provided which relate to the kinds of personnel positions they may expect to fill.

FRESHMAN YEAR

First Semester		Second Semester	
(3)	EG 110 (Drafting Fundamentals)	(2)	EG 210 (Industrial Sketching)
(2)	ENGL 101 (English Composition I)	(2)	ENGL 102 (English Composition II)
(1)	IS 100 (Introduction to Industrial Supervision)	(3)	PSY 120 (Elementary Psychology)
(5)	MA 150 (Mathematics for Technology)*	(3)	SOC 100 (Introductory Sociology) or SOC 312 (American Society)
(3)	IED 111 (Introduction to Materials and Processes of Industry)	(2)	MET 215 (Welding)
(2)	Elective	(3)	Elective
(16)		(15)	

SOPHOMORE YEAR

Third Semester		Fourth Semester	
(2)	EET 214 (Electricity Fundamentals)	(3)	IS 374 (Industrial Supervision)
(3)	ECON 210 (Principles of Economics)	(3)	INDM 200 (Introductory, Accounting)
(3)	COM 114 (Fundamentals of Speech Communication)	(3)	EET 343 (Electronics Fundamentals)
(2)	MET 335 (Industrial Machine Process)	(3)	Math/science selective
(3)	Math/science selective	(3)	Elective
(3)	Elective	(3)	Elective
(16)		(18)	

* See mathematics footnote, p. 8.

JUNIOR YEAR

Fifth Semester		Sixth Semester	
(3)	IS 375 (Basic Methods of Industrial Training)	(3)	IE 477 (Work Methods and Measurements)
(2)	IS 331 (Industrial Safety)	(3)	IS 474 (Conference Leadership)
(3)	PHYS 210 (Nature of Physical Science I)	(3)	PHYS 211 (Nature of Physical Science II)
(3)	PSY 572 (Organizational Psychology)	(3)	CS 210 (Laboratory on Data Processing) or CPT 200 (Computer Programming Fundamentals)
(3)	Speech selective	(3)	INDM 431 (Personnel Relations)
(3)	Philosophy selective	(3)	Elective
(17)		(18)	

SENIOR YEAR

Seventh Semester		Eighth Semester	
(3)	INDM 430 (Labor Relations)	(3)	SOC 516 (Industrial Sociology)
(3)	IS 574 (Managerial Training and Development)	(3)	INDM 480 (Elements of Management)
(3)	ENGL 420 (Business Writing: General Applications)	(3)	Personnel selective
(3)	Personnel selective	(3)	Personnel selective
(3)	Personnel selective	(3)	Elective
(15)		(15)	

PERSONNEL SELECTIVES

ECON 551; INDM 553, 554; IED 510, 564; PSY 570, 574; IS 577; AS 330; SOC 517; IE 576; COM 318; ED 285, 501, 516.

Cooperative Education Program

The co-op program within the Department of Industrial Supervision is usually a total of either four and one-half or five years in length.

To be admitted to the cooperative education program, the student must meet the following requirements:

1. A cumulative graduation index of 4.0 or higher covering a minimum of two semesters of academic work. No index below 4.0 will be accepted.
2. Must be accepted by both the Cooperative Education Program adviser and by the cooperating company.
3. May be in either the supervision major or the personnel major and must complete all course requirements listed in the plan of study for that major. Work credits will be applied to meet elective requirements only and will not substitute for required courses.
4. Must complete a minimum of two full semesters or 12 credit hours of work in industry.

CERTIFICATE PROGRAMS

The certificate programs are designed primarily for the mature, part-time student through consultation with representatives from labor, industry, and the service areas of our society.

Advancement in each of these programs can be varied to suit the needs of the individual student who may take one, two, or three courses each semester. The average part-time student can complete any one of the programs within three years.

Enrollment is on the basis of a program carefully tailored to meet individual student needs and vocational objectives through consultation with an experienced counselor. Changes in the student's program arising out of new work assignments or changes in vocational objective may be worked out with his counselor.

Students successfully completing personal service courses earn certificate units and not University credit.

Flight Instruction Courses

The Department of Aviation Technology offers a total of 25 flight and ground support courses on the Lafayette campus. These courses are for election by any student in the University, including special students, with the approval of his or her adviser and the General Aviation Flight Technology Section. University staff members will be eligible to enroll in these courses. Registration in these courses is subject to limitations imposed by the availability of flight equipment. Registration in the flight courses will be on a first-come, first-served basis.

Physical Examination. Arrangements for a flight physical examination must be made by the beginning student. This examination must be administered by an approved FAA medical examiner. A listing of approved examiners is to be found in the flight instruction office at the Purdue Airport. Students in advanced courses offering flight must possess a second-class medical certificate dated within the preceding 12 calendar months; students in private pilot area courses are required to hold a third-class physical issued within the preceding 24 calendar months. These physical requirements must be accomplished before enrollment.

PERSONAL SERVICE COURSES
(Noncredit)

Certificate Units	*Course Number and Title*	*Fee*
(1)	AT 50 (Pilot Refresher)	$180
(1)	AT 51 (General Flight Refresher and Orientation)*	170
(1)	AT 52 (Instrument Pilot Refresher)*	190
(1)	AT 53 (Multi-engine Rating Refresher)	200
(1)	AT 54 (Flight Instructor Refresher)*	200
(1)	AT 55 (Cross Country Refresher)*	180
(3)	AT 56 (Accelerated Instrument Course)*	460
(1)	AT 59 (Link Trainer Flight)	110
(2)	AT 60 (Accelerated Instrument Academic Course)	35
(1)	AT 61 (Aviation Indoctrination)	10
(1)	AT 62 (Aviation Indoctrination) Flight Option)	80

* Have supporting noncredit ground school courses.

UNDERGRADUATE COURSES
(Credit)

Certificate Units	*Course Number and Title*	*Enrollment Fee*	*Continuation Fee*	*Combined Cost*
(1)	AT 143 (Private Flight)	$285	$350	$635
(1)	AT 148 (Commercial Flight I)	285	350	636
(1)	AT 243 (Commercial Flight II)	285	350	635
(1)	AT 248 (Commercial Flight III)	285	350	635
(1)	AT 341 (Instrument Flight)	285	350 and 80	715
(2)	AT 351 (Flight Instructor)	270	240	510
(1)	AT 353 (Multi-Engine Rating)	460	....	460

FLIGHT SUPPORT GROUND COURSES*

		Fee
(3)	AT 144 (FAA Private Requirements)	$75
(3)	AT 149 (FAA Commercial Requirements I)	75
(3)	AT 244 (FAA Commercial Requirements II)	75
(3)	AT 249 (FAA Commercial Requirements III)	75
(3)	AT 342 (FAA Instrument Requirements)	75
(3)	AT 352 (Flight Instructor Lectures)	75

Practical Industrial Electronics

This program emphasizes applications and consists of laboratory-type courses with two three-hour classes a week. One hour of explanation of electrical principles and demonstration of the use of instruments is presented at each class meeting, accompanied by two hours of laboratory experience. Training is obtained by the actual use of modern electronic instruments. Trouble-shooting techniques are emphasized.

Training in mathematics is desirable, but it is not necessary that students have formal training in algebra, geometry, and trigonometry. The necessary mathematics is taught in the course. Students that pass an advanced standing examination will be admitted to the second semester or the second year course. High school graduation is not required.

Certificate Units	*Course Number and Title*
	First Semester
(4)	EET 15 (Basic Electricity)
	Second Semester
(4)	EET 23 (Transistor and Vacuum Tube Fundamentals)

* Have supporting noncredit ground school courses.

Third Semester

(4) EET 39 (Electronic Circuits)

Fourth Semester

Two options are available:

(4) EET 41 (Electronic Control Circuits)

or

(4) EET 45 (Communications Electronics)

Highway Technician

Offered at: Fort Wayne, Indianapolis, North Central.

This program is offered during the summer term by the Department of Construction Technology in conjunction with the Indiana State Highway Commission. Tuition is paid by the State Highway Commission, and students are paid a nominal salary while attending school provided satisfactory grades are maintained. At the completion of the program, those students who pass are given jobs with the Indiana State Highway Commission and are obligated to work there for a minimum of one year. Nine of the 11 credit hours can be applied toward the degree of Associate in Civil Engineering Technology.

Certificate Units	*Course Number and Title*
(3)	CET 100 (Technical Computations)
(3)	CET 104 (Elementary Surveying)
(2)	CET 208 (Route Surveying)
(3)	EG 110 (Drafting Fundamentals)

Professional Foremanship

The Professional Foremanship certificate program is an intensive and practical curriculum equivalent to 36 semester hours. It is intended to provide foremen with the professional education needed to handle the many supervisory and technical problems which they meet daily in technical, communications, and human relations fields.

The program has been set up by representatives of industry, professional foremen's organizations, and the Department of Industrial Supervision. It is designed to meet the needs of management, which is vitally concerned with training foremen for positions of leadership. Enrollment is on the basis of a program worked out with the counselor assigned and carefully tailored to individual needs.

Students admitted in the temporary classification may qualify for the certificate in professional foremanship by taking approved undergraduate-level, lower-division technology courses for which their admission classification establishes eligibility and for which they have necessary prerequisites. Appropriate credits earned in this program while in the temporary student classification may be used for credit toward an associate degree under rules governing reclassification as a regular student.

REQUIRED COURSES

Certificate Units	*Course Number and Title*
(3)	IET 104 (Industrial Organization and Production)
(3)	PSY 120 (Elementary Psychology)
(3)	IS 152 (Human Relations in Industry)
(3)	COM 114 (Fundamentals of Speech Communication)

OPTIONAL COURSES

Group I (14) semester hours maximum

Communication	10 hours maximum
English and report writing	7 hours maximum
Advanced courses in interpersonal communication (speech)	3 hours maximum
Economics and labor relations	6 hours maximum
Physical sciences	12 hours maximum

Group II (8) semester hours maximum

Courses specific to two-year certificate curricula ..... 8 hours maximum

Courses from one or more technologies may be elected in this group provided that they relate directly to the individual's duties, responsibilities, or line of promotability and prior approval of the counselor and the head of the department administering the program is obtained.

MANAGEMENT EXPERIENCE

(Equivalent to 12 semester hours)

Before receiving the Professional Foremanship certificate, the candidate must have had two years of successful experience in the management field. Satisfaction of this requirement is met by a confirming letter from the managerial employer under whom the candidate worked. Formal credit is not established for this work, but it is considered equivalent to 12 semester hours of credit in the professional foremanship program.

Practical Nursing

Offered at: Calumet.

The program of practical nursing is within the Department of Nursing. The purpose is to prepare a person to give nursing care to the subacutely ill, the convalescent, the chronically ill, the aged, and infirm patients in hospitals and other institutions or the home under the supervision of a registered professional nurse or licensed physician.

The program is accredited by the Indiana State Board of Nurses Registration and Nursing Education. It is one calendar year in length. The curriculum is planned to give the first 16 weeks in classroom and laboratory instruction in the basic principles of nursing care with the primary emphasis on developing skills and techniques in giving safe and comforting nursing care to patients. There are four periods of eight weeks each in which the student is rotated in the medical, surgical, obstetrical, and pediatric departments of the

cooperating hospitals, giving nursing care to patients and learning to be a member of the nursing team under the guidance of the clinical instructor.

Purdue University awards a certificate upon satisfactory completion of the course, and the person is eligible for application to the state board examination for license to practice nursing as a licensed practical nurse (L.P.N.).

Certificate Units	*Course Number and Title*	
	First Semester	
(6)	NT 8 (Vocational Ethics and Personal Hygiene)	$38
(7)	NT 16 (Family Living)	$74
(10)	NT 24 (Nursing Care)	$63
	Second and Third Semesters	
(11)	NT 72 (Pediatrics and Long-term Illness Clinical Experience)	$10
(11)	NT 56 (Surgical Clinical Experience)	$10
(11)	NT 64 (Maternity Clinical Experience)	$10
(11)	NE 72 (Pediatrics and Long-term Illness Clinical Experience)	$10

SPECIALIZED SERVICE PROGRAMS

The School of Technology cooperates with individual industries or communities in the development and operation of specialized training programs. Such programs normally operate on a regular fee basis but frequently are organized at the request of a particular industry or on a contract basis.

Since such specialized service programs are usually restricted to a single location and serve a special need, they are not described in this general catalog and may differ to some extent in entrance requirements, fees, advanced standing provision, and other details from the general fields of study described in this catalog. Included in these specialized programs are industrial programs in cooperation with local industry primarily designed for up-grading technician employees.

Inquiries should be directed to the Dean of Continuing Education or the Dean of the School of Technology on the Lafayette campus. At other Purdue campuses, inquiries should be directed to the dean of the respective campus.

SUPERVISION PROGRAMS

A training and development service made available to business, industry, and government on a fee basis, supervision programs is a section within the Department of Industrial Supervision. Its various programs are offered on a noncredit basis.

The objectives of the supervision programs are to: (1) stimulate the process of personal and organization development; (2) offer professional training to individuals and groups to assist them to meet defined training needs and objectives; (3) provide service, research, and instruction concerning the functions,

principles, and problems in supervision; and (4) assist people in gaining an appreciation and an understanding of the attitudes, knowledge, and skills involved in supervision.

Training consultation is available to industry and business through the supervision programs, as well as various research activities related to industrial training. The programs of instruction, conducted both on and off campus, are offered on an intensive basis, as part-time (one day per week) programs, and as custom-made personnel development programs designed to meet specific objectives and needs rather than general or basic training needs.

The supervision programs are staffed by faculty members of the Department of Industrial Supervision who have pertinent work experience, professional preparation, and other particular qualifications as specialists in the career field of industrial training. Certain instructional programs also include presentations by selected resource persons who are employed in business and industry. These resource people supplement the teaching performed by the regular full-time or part-time professional faculty.

Description of Courses

COURSES LISTED on the following pages are, for the most part, being offered during the academic year 1971-72. It is possible that new courses may be added, some courses presently offered may be eliminated, and still others may be modified in content, combined with others, or revised in some other manner. Counselors should be consulted about curriculum developments, course requirements, and the like by the student when he proceeds to make his program for each succeeding semester.

For each course in applied science the description should be interpreted as follows: first, the official number of the course; second, its special title; and third, the number of class, laboratory, and credit hours or certificate units. For example,

EET 372. CONTROL LABORATORY.
Class 1, Lab. 3, cr. 2.

indicates that EET 372 is entitled Control Laboratory, meets one hour in class and three hours in laboratory per week, and gives two semester hours credit.

Course numbers indicate the following:

0-99 special service courses primarily for adults working for a certificate or toward job improvement;

100-299 lower-division courses normally scheduled for freshmen and sophomores;

300-949 upper division courses normally scheduled for junior and seniors;

500-599 dual-level courses that may be scheduled by juniors and seniors, and by graduate students for graduate credit.

ARCHITECTURAL TECHNOLOGY

D. D. Moss, in charge of curriculum and Head of Department of Construction Technology

Professor: (Calumet) C. R. Hutton, M.S.

Associate Professors: (Calumet) C. J. McAllister, M.S.C.P.; (Indianapolis) W. E. Davis, M.Arch.

Assistant Professors: (Calumet) N. G. Scarlatis, M.A.; G. R. Sullivan, M.S.; (Fort Wayne) R. T. Flemming, B.Arch.; J. J. McCarron, B.Arch.; (Indianapolis) P. J. Leech, B.Arch.; D. L. Richardson, B.Arch; (North Central) H. S. Driggs, B.S. Arch.

Instructors: (Calumet) L. L. Beck, B.S.I.Ed.; E. A. Dudek, B.S.; G. J. Kachoris, B.A.; Barbara M. Meeker, A.B.; (Indianapolis) G. E. Clark, B.S. Arch.

UNDERGRADUATE LEVEL

Lower-Division Courses

ART 116. ARCHITECTURAL DRAWING. Lab. 6, cr. 2.
Introduction to architectural drawing, including use of instruments, lettering, orthographic projection, isometric views, and simple working drawings.

ART 118. ARCHITECTURAL PROJECTIONS. Lab. 6, cr. 2.
Introduction to projection, intersections, shading and shadows, and perspective drawing.

ART 120. FREEHAND DRAWING I. Lab. 6, cr. 2.
Freehand sketching, using pencil, charcoal, ink.

ART 121. FREEHAND DRAWING II. Lab. 6, cr. 2. Prerequisite: ART 120.
Continuation of ART 120. Use of color.

ART 150. ARCHITECTURAL CONSTRUCTION I. Lab. 9, cr. 3. (Evening Division: Lab. 6, cr. 3, with outside assignments required.) Prerequisite: ART 118 or EG 110.
Problems of wood frame structure, such as houses, including details, and elementary design.

ART 164. BUILDING MATERIALS. Class 2, cr. 2.
Properties and use of materials as found in building construction.

ART 172. SYSTEMS OF CONSTRUCTION. Class 2, cr. 2.
Survey of different types of construction, including wood, steel, and reinforced concrete and curtain walls, considering the characteristics, advantages, and limitations.

ART 204. BUILDING REGULATIONS. Class 2, cr. 2.
Building codes, ordinances, and regulations, with emphasis on those for structures in Indiana.

ART 210. HISTORY OF ARCHITECTURE I. Class 3, cr. 3.
Survey of styles and influences of cultures which led to the development of architecture from the earliest times to the present day.

ART 222. ARCHITECTURAL CONSTRUCTION II. Lab. 9, cr. 3. (Evening Divisions: Lab. 6, cr. 3, with outside assignments required.) Prerequisite: ART 150.
Projects in moderate sized buildings using various building materials. Transmission of this knowledge in the form of construction drawings.

ART 224. ARCHITECTURAL CONSTRUCTION III. Lab. 9, cr. 3. (Evening Divisions: Lab. 6, cr. 3, with outside assignments required.) Prerequisite: ART 222.
Continuation of ART 222 with emphasis on larger and more complex structures.

ART 276. SPECIFICATIONS AND CONTRACT DOCUMENTS. Class 2, cr. 2.
Preparation of general conditions and major phases of building construction specifications, study agreements, contracts, liens, and bonds.

ART 278. BUILDING CONSTRUCTION PRACTICES. Class 2, cr. 2. Prerequisites or corequisites: IS 268 and ART 276.
Extensive survey of business practices and problems common to the construction industry.

ART 280. QUANTITY SURVEY. Class 2, Lab. 3, cr. 3. Prerequisite: ART 150.
Approximate and detailed methods of estimating materials and labor required to erect a building.

ART 284. MECHANICAL EQUIPMENT OF BUILDINGS. Class 3, cr. 3.
Survey course of the different types of systems and their applications.

ART 292. ESTIMATING. Class 3, cr. 3.
Approximate and detailed methods of estimating materials and labor required to erect a building.

ART 299. ARCHITECTURAL TECHNOLOGY. Cr. 1-4.
Hours and subject matter to be arranged with staff. Course may be repeated up to nine hours.

UNDERGRADUATE LEVEL

Upper-Division Courses

ART 310. HISTORY OF ARCHITECTURE II. Class 3, cr. 3. Prerequisite: ART 210.
A survey of architectural developments of the nineteenth and twentieth centuries.

ART 322. ARCHITECTURAL DRAFTING. Lab. 9, cr. 3. Prerequisite: EG 110. Not open to students with credit in ART 222.
The drawing of architectural plans for moderate sized buildings using various building materials. Plans include floor plans, elevations, and detail sections. Attention is given to the quality of the drawings as well as the technical details of construction.

ART 341. ARCHITECTURAL DESIGN I. Lab. 6, cr. 2. Prerequisite: ART 224.
Planning, development, and architectural delineation of small structures with pencil, charcoal, and water color.

ART 342. ARCHITECTURAL DESIGN II. Lab. 6, cr. 2. Prerequisite: ART 341.
Continuation of ART 341 with emphasis on larger and more complex structures.

ART 360. COMMUNITY PLANNING I. Class 2, Lab. 3, cr. 3.
Analysis, procedure and application of planning problems.

ART 362. COMMUNITY PLANNING II. Class 1, Lab. 6, cr. 3.
Continuation of Community Planning I. Application of planning to specific problems.

ART 364. MATERIALS OF CONSTRUCTION. Class 2, cr. 2. Not open to students with credit in ART 164.
Fundamental aspects of the important materials of modern construction and how these materials can be used to best advantage.

ART 390. CONSTRUCTION FIELD PROBLEMS. Cr. 1.
Credit to be established by assignment to special field problems, such as a local construction project, with the aim of giving the student first-hand experience in supervision practice.

ART 476. SPECIFICATIONS. Class 3, cr. 3.
Expansion of the general principles of construction documents covered in ART 276. Detailed study of purpose and intent of specifications. Preparation of various sections of specifications for specific jobs, including development of the general conditions, adaptation of selected provisions from standard specifications, and delineation of special supplemental conditions.

ART 490. SENIOR PROJECT. Cr. 1-6.
Final project aimed at combining the skills and knowledge gained from the various areas of studies. The student will be expected to report graphically, orally, and in written form on a final project approved by the adviser. Presentation will be made to a representative board of the faculty determined by the adviser.

ART 499. ARCHITECTURAL TECHNOLOGY. Cr. 1-4.
Hours, subject matter, and credit to be arranged with staff. Course may be repeated for credit up to nine hours.

AVIATION TECHNOLOGY

J. R. Maris, Head of the Department

Professor: J. R. Maris, B.S.

Associate Professors: (Lafayette) E. R. Blatchley, M.S.; W. P. Duncan, M.S.; C. F. Holleman, B.S.; I. E. Treager, M.S.

Assistant Professors: (Lafayette) R. F. Carton, M.S.; E. K. Hoover, M.S.; J. A. Marchand, B.S.; J. R. Rardon, M.S.; G. L. Summers, M.A.; Albert Toth, M.S.; R. C. Wesley, FAA Cert.

Instructors: (Lafayette) R. M. Burns, B.S.; G. W. Dennis, B.A.; L. W. Gross, B.S.; R. M. Grundman, B.S.; T. L. Harshbarger, M.S.; Jill S. McCormick, FAA Cert; M. S. Moreno, B.S.; B. L. Stover, B.S.; R. T. Tuite, B.S.; W. A. Turner, B.S.; D. P. Wolfrum, B.S.

PERSONAL SERVICES COURSES

Students successfully completing personal service courses numbered 1 through 99 earn certificate units and not University credit.

AT 50. PILOT REFRESHER. Cert. units 1. Prerequisite: FAA pilot certification or AT 143.

A flight course consisting of three hours of dual instruction and seven hours of solo flight to include no cross country flight.

AT 51. GENERAL FLIGHT REFRESHER AND ORIENTATION. Cert. units 1.

A flight course designed for the nonpilot to orient teachers and others in the development of aviation flight. Eight hours of dual instruction and ten hours of classroom discussion.

AT 52. INSTRUMENT PILOT REFRESHER. Cert. units 1. Open only to FAA certificated pilots who hold commercial certificates or private pilot certificates with 200 hours pilot in command flight experience.

A flight course designed for the instrument rated pilot or the pilot who has nearly completed instrument training and requires a nominal amount of instruction for its completion. Eight hours dual and two solo hours.

AT 53. MULTI-ENGINE RATING REFRESHER. Cert. units 1. Open only to FAA certificated pilots who hold multi-engine ratings.

Consists of five hours dual flight instruction and designed to refamiliarize the multi-engine rated pilot with multi-engine techniques.

AT 54. FLIGHT INSTRUCTOR REFRESHER. Cert. units 1. Open only to FAA certificated pilots who hold commercial certificates or private pilot certificates with 200 hours pilot in command flight experience.

A course consisting of seven hours of dual, three hours of solo, and ten hours of classroom instruction, which is designed to certificate the nearly completed pilot or to refresh the already certificated pilot in the techniques of flight instruction.

AT 55. CROSS COUNTRY REFRESHER. Cert. units 1. Prerequisite: AT 143 or FAA pilot certification.

A course consisting of four hours dual, six hours solo, and five hours classroom discussion designed to increase cross country flight techniques or to enable the pilot to retain already learned skills.

AT 56. ACCELERATED INSTRUMENT COURSE. Cert. units 3. Open only to FAA certificated commercial pilots or private pilots with 200 hours pilot command experience.

A lesser course than AT 341 consisting of 20 hours dual, ten hours ground pilot trainer, and 30 hours classroom instruction, to be offered those certificated pilots who have had some instrument training and require an accelerated type of course to qualify for an instrument rating.

AT 59. GROUND PILOT TRAINER. Cert. units 1. Open to all grades of pilot certificate holders.

A course in ground pilot trainer consisting of ten hours of supervised instruction.

AT 60. ACCELERATED INSTRUMENT ACADEMIC COURSE. Cert. units 2. Open to all grades of pilot certificate holders.

A course in the academic area of instrument flight techniques consisting of 36 hours of classroom instruction in instrument rating fundamentals.

AT 61. AVIATION INDOCTRINATION. Cert. units 1.

A course in the principles of flying and radio navigation consisting of ten hours of instruction.

AT 62. AVIATION INDOCTRINATION. (Flight Option) Cert. units 1. Prerequisite or corequisite: AT 61.

A course in basic flying techniques, the use of radio for communication, and navigation, consisting of four hours of dual flight instruction.

UNDERGRADUATE LEVEL

Lower-Division Courses

AT 100. INTRODUCTION TO AVIATION TECHNOLOGY. Class 1, cr. 1.

Introduction to the Department of Aviation Technology and its curricula and an overview of the career opportunities in aviation and related fields.

AT 112. AIRCRAFT PISTON ENGINES. Class 3, Lab. 6, cr. 5.

Fundamental principles of aircraft engines, including engine theory, materials and methods of construction, lubricants and lubrication systems, induction systems and superchargers, engine installation and run-up, disassembly and inspection of various types of aircraft engines.

AT 113 FEDERAL AIR REGULATIONS AND FORMS. Lab. 2, cr. 1.

Familiarization with federal air regulations governing safe practices in maintenance and inspection of airframes and power plants will be given. Repeated practice in the completion of the forms required to report on maintenance and inspection practices will be accomplished.

AT 114. AIRCRAFT PISTON ENGINE ACCESSORIES. Class 3, Lab. 3, cr. 4.

Fundamental principles of aircraft engine accessories, including theoretical and practical work on float and pressure injection carburetors, fuel injection systems, magnetos and ignition systems, generators and generator control systems.

AT 115. AIRCRAFT STRUCTURES. Class 3, Lab. 6, cr. 5.

A study of the design, fabrication, and maintenance of aircraft structures. Laboratory work involves experience with the materials and processes involved in fabrication and repair of structural assemblies.

AT 116. AIRFRAME MAINTENANCE Class 3, Lab. 6, cr. 5.

Principles and methods of light aircraft inspection, maintenance and repair of airframes, including fabric and finishing methods and assembly and rigging. Laboratory work includes rebuilding and return to service of a typical light aircraft.

AT 121. AIRCRAFT ENGINES. Class 3, cr. 3.

Fundamental principles of aircraft engines, including engine theory, materials and methods of construction, lubricants and lubrication systems, induction systems, superchargers, general engine operating procedures, cruise control, and performance diagnosis.

AT 125. AERONAUTICS. Class 3, cr. 3.

Course is designed to cover basic material such as aircraft types; subsonic, transonic, and supersonic aerodynamics; theory of flight; airplane structures; airborne weather radar; high altitude weather; aviation physiology; and flying higher performance aircraft.

AT 128. AIRCRAFT SYSTEMS AND COMPONENTS. Class 3, cr. 3.

A study of aircraft design and construction including systems and components of typical aircraft ranging from light aircraft to jet airline aircraft.

Emphasis will be directed toward an understanding of theory of operation and analysis of problems associated with those systems and components discussed.

AT 131. AIRCRAFT ELECTRICITY. Class 3, cr. 3.

A study of the properties and characteristics of electric and magnetic circuit elements as applied to aircraft DC components and systems. Familiarization with federal air regulations governing proper installation and inspection of electrical systems, batteries, DC power systems, and instruments are considered. Basic properties and characteristics of electrical systems utilizing 400 cps alternating voltage are also discussed.

AT 132. ELECTRONICS I. Class 3, cr. 3.

Covers applications of Kirchoff's Laws to closed networks; discusses diodes and

amplification of current; and gives a brief introduction to reactances.

AT 133. AIRCRAFT COMMUNICATION SYSTEMS. Class 3, cr. 3. Prerequisite: AT 132.

Study of characteristics and operation of typical aircraft VHF transmitters and receivers currently being used in modern aircraft. A study of the manufacturer's manual is included to familiarize the student with proper maintenance procedures. A description of interphone systems and related devices is also included.

AT 134. ELECTRONICS II. Class 3, cr. 3. Prerequisite: AT 132.

Discusses impedance and resonance in RF circuits; covers circuit coupling, filter networks, and RF amplification. Contains a brief introduction to UHF circuits.

AT 135. AVIONICS LABORATORY I. Lab. 6, cr. 2. Corequisites: AT 131 and 132.

Demonstrates applications of Kirchoff's Laws in DC circuits, involves construction of power supplies, and studies power loss in circuits; shows relationships of magnetic flux and electric current.

AT 136. AVIONICS LABORATORY II. Lab. 6, cr. 2. Corequisites: AT 133 and 134.

Demonstrates reactance and impedance in RF circuits; involves the construction of oscillators, coupled circuits, cascaded amplifiers, and triode operated devices.

AT 138. AIRCRAFT AND MISSILE ORIENTATION. Class 3, Lab. 3, cr. 4.

A study to assist the student to meet the challenges and responsibilities of the aerospace age. An understanding will be developed of the underlying scientific principles basic to aerospace vehicle development and operation.

AT 143. PRIVATE FLIGHT. Lab. 3, cr. 1. Corequisite: AT 144 unless AT 143 applicant possesses a current FAA form 578A indicating completion of private pilot written requirement.

Flight, ground pilot trainer, and ground instruction to meet requirements for FAA private pilot certificate. Includes 25 hours of dual, 12 hours of solo, eight hours of discussion, and five hours of ground pilot trainer instruction.

AT 144. FAA PRIVATE REQUIREMENTS. Class 3, cr. 3.

Preparation for the FAA written examination for the private pilot certificate. Covers FAA regulations, theory of flight, aircraft safety, navigation, meteorology, and radio.

AT 148. COMMERCIAL FLIGHT I. Lab. 3, cr. 1. Prerequisite: AT 143 or private pilot's certification.

Continuation of flight instruction received in AT 143 for the purpose of developing a higher degree of coordination and judgment through additional experience in more advanced maneuvers and cross-country flying.

AT 149. FAA COMMERCIAL REQUIREMENTS I. Class 3, cr. 3. Corequisite: AT 148.

Additional ground instruction in navigation, meteorology, and aircraft engines.

AT 209. AIRCRAFT WELDING AND MATERIALS. Class 1, Lab. 3, cr. 2.

Welding practices applied to aircraft materials; alloys of steel, aluminum, magnesium and nickel.

AT 210. AIRCRAFT ENGINE OPERATION. Lab. 3, cr. 1. Prerequisites: AT 112 and 114. Co-requisite: AT 214.

Operation and diagnostic testing of aircraft engines. Students will collect operating data and make performance calculations. Inspection, testing, and adjustments will be made to engine systems. Use of test equipment such as engine and ignition analyzers will be emphasized.

AT 211. TRANSPORT AIRCRAFT MAINTENANCE. Lab. 6, cr. 2.

An introduction to the maintenance procedures, planning, and records required of a certificated airline utilizing transport category equipment.

AT 213. AIRCRAFT SYSTEMS. Class 3, Lab. 3, cr. 4.

Inspection, maintenance, and theory of operation of aircraft hydraulic, electrical, fuel and oil, pressurization, anti-icing, and instrument systems.

AT 214. AIRCRAFT GAS TURBINE ENGINES. Class 3, Lab. 5, cr. 5.

Fundamental principles of jet engines, including the study of compressors, combustion chambers, turbines, fuel controls, fuel systems, lubrication, and ignition systems. Disassembly, inspection, and run up of various gas turbine engines. Familiarization with turboprops, rockets, pulse jets, and ram jets will also be given.

AT 215. AIRCRAFT ELECTRICITY. Class 3, Lab. 6, cr. 5.

A study of aircraft electrical systems as they are inter-related with other aircraft systems, power plants, circuits, instrumentation, apparatus, and controls, including their inspection, operation, and maintenance.

AT 216. AIRCRAFT PROPELLER SYSTEMS. Class 1, Lab. 3, cr. 2.

A comprehensive course on propeller theory, function, and operation. A wide range of types and sizes of propellers will be covered for consideration on operations, inspection, maintenance, and overhaul procedures and practices.

AT 218. GENERAL AVIATION AIRCRAFT MAINTENANCE. Lab. 3, cr. 1.

Maintenance of airworthy powerplants, accessories, and airframes of general aviation type aircraft in accordance with FAA regulations.

AT 219. SURVEY OF FAA MECHANIC REQUIREMENTS. Lab. 5, cr. 2.

Must be taken during the final semester for the completion of the A.A.S. degree in aviation maintenance technology.

A survey and review of the requirements as set forth in appropriate FAA publications indicating skill, knowledge, and experience requirements necessary to exercise the privileges of the airframe and powerplant mechanic.

AT 231. AIRCRAFT NAVIGATION SYSTEMS. Class 3, cr. 3. Prerequisite: AT 134.

A study of characteristics and operation of typical aircraft navigation systems currently being used in modern aircraft. The course covers remote compass systems, ADF, Omni, and ILS equipment.

AT 232. ELECTRONICS III. Class 3, cr. 3. Prerequisite: AT 134.

Includes a study of the electromagnetic spectrum, speech modulation of carrier waves, and frequency and phase modulation. Discusses FM and VHF transmitters, receivers, and antenna systems.

AT 233. AIRCRAFT PULSE AND MICROWAVE SYSTEMS. Class 3, cr. 3.

Characteristics and operation of a typical weather radar are studied. Radar systems measurements and test equipment are discussed. Also, the operation of DME and ATC transponder is included.

AT 234. ELECTRONICS IV. Class 3, cr. 3.

Course covers the operation of servo systems, synchros, resolvers, and related hardware. Reviews transistors and semiconductor diod theory. Provides an introduction to analog and digital computer fundamentals, circuit logic, switching, and digital circuits.

AT 235. AVIONICS LABORATORY III. Lab. 6, cr. 2. Corequisites: AT 231 and AT 232.

Demonstrates the application of solid state devices to VHF and UHF circuits. Studies wave propagation, antenna properties, field strength measurements, and detector operation.

AT 236. AIRCRAFT AUTOMATIC FLIGHT CONTROL SYSTEMS. Class 3, cr. 3.

A study of current aircraft automatic flight control devices and systems. The course will include requirements and elements necessary for all-weather landing capability. Autopilot systems, couplers, flight director systems, comparator warning systems, and radio altimiter systems will be discussed.

AT 237. AVIONICS LABORATORY IV. Lab. 6, cr. 2. Corequisites: AT 233 and AT 234.

Includes work with magnetrons, wave guides, and electron deflection in CR tubs. Introduction to safety procedures and hazards from microwave radiation. Demonstrates distance measuring and position determination.

AT 243. COMMERCIAL FLIGHT II. Lab. 3, cr. 1. Prerequisite: AT 148.

Continuation of flight training received in AT 148. Emphasis placed on cross-country and instrument flight. Introduction to night flight is included.

AT 244. FAA COMMERCIAL REQUIREMENTS II. Class 3, cr. 3. Corequisite: AT 243.

Stresses radio communication and navigation, use of E6B computer, and aircraft instrument study.

AT 248. COMMERCIAL FLIGHT III. Lab. 3, cr. 1. Prerequisite: AT 243.

Continuation of flight training received in AT 243. Emphasis is placed on precision flying to develop technical and aeronautical experience as required by

the FAA for a commercial pilot certificate.

AT 249. FAA COMMERCIAL REQUIREMENTS III. Class 3, cr. 3. Corequisite: AT 248.

Forty-five classroom hours devoted to aircraft, FAA regulations, aerial navigation meteorology, aircraft engines, and radio aids to navigation in preparation for the commercial pilot written examination.

UNDERGRADUATE LEVEL

Upper-Division Courses

AT 321. AIRWAYS PROCEDURES I. Class 3, Lab. 3, cr. 4. Prerequisites: AT 341 and 342 or equivalent.

Emphasis is placed on advanced types of radio navigation, cross country techniques, and voice procedures. Practical experience is provided in the use and preparation of the Purdue Airlines flight forms. Instrument flight experience is provided in syntheic flight trainers.

AT 322. AIRWAYS PROCEDURES II. Class 1. Lab. 3, cr. 2. Prerequisite: AT 321.

Emphasis is placed on increasing instrument proficiency to a high level. Various types of orientations, intercept problems, holding pattern entries and approaches will be practiced along with enroute work. Training will be given primarily in DC-6B simulator and will include operations under both normal and emergency situations.

AT 323. ADVANCED NAVIGATION. Class 3, cr. cr. 3. Prerequisite: AT 342 or equivalent.

A continuation of the study of dead reckoning, as well as a study of compressibility effects on navigation, principles and techniques of navigation by electronic, celestial and pressure pattern methods.

AT 325. AIRLINE OPERATIONS: Class 1, cr. 1.

Discussion of airline history, organization, equipment, operating costs, and revenues, aircraft utilization, aircraft maintenance, and engineering, passenger and cargo operations.

AT 328. DC-3 AIRCRAFT AND ENGINE FAMILIARIZATION. Class 2, cr. 2. Prerequisites: AT 121, 128.

Covers the specifications, construction features, controls, engines, systems, instrumentation, emergency equipment, normal and emergency operating procedures of the DC-3 airplane.

AT 341. INSTRUMENT FLIGHT. Lab. 3, cr. 1. Prerequisite: private or commercial pilot certificates.

Prepares the student for the FAA instrument ratings. The student will receive 32 hours of instrument flight and 16 hours of ground pilot trainer.

AT 342. INSTRUMENT LECTURES. Class 3, cr. 3. Corequisite: AT 341.

Forty-five classroom hours on FAA regulations, meteorology, aircraft, theory of flight, navigation instruments, radio and navigational aids, and instrument flight procedures.

AT 351. FLIGHT INSTRUCTOR FLIGHT. Lab. 4, cr. 2. Prerequisite: FAA commercial pilot certificate.

Flight and ground instruction to prepare the student for the FAA flight instructor certificate. Consists of 30 hours of dual and solo flight instruction. The balance of the laboratory periods are devoted to discussion of flight and instructional techniques and observation of actual flight instruction.

AT 352. FLIGHT INSTRUCTOR LECTURES. Class 3, cr. 3.

Preparation for the FAA flight instructor and advanced ground instructor written examinations. Covers theory of flight and ground instruction, aircraft performance, analysis of maneuvers, and federal aviation regulations.

AT 353. MULTI-ENGINE RATING COURSE. Lab. 2, cr. 1. Prerequisite: FAA pilot certificate.

Preparation for the FAA multi-engine rating. Consists of ten hours of dual and 20 hours of individual instruction. Open only to persons holding an FAA pilot certificate.

AT 354. SUPERVISED FLIGHT OPERATIONS EXPERIENCE. Cr. 3. (May be repeated to a maximum of nine credit hours.)

Supervised flight operations experience directed toward providing an orientation background and insight into flight operations in aircraft of 12,500 pounds and under gross weight.

AT 400. DC-3 FLIGHT TRANSITION. Class 1, cr. 1.

This course is the flight phase of the DC-3 qualification. Standardization and coordination of the procedures associated with cockpit functions will be stressed. Each student will be given a DC-3 checkout by the PAC chief pilot. He will be certified as a copilot on the DC-3 aircraft flown by Purdue Airlines Incorporated.

AT 401. DC-3 FLIGHT I. Class 3, cr. 3. Corequisite: AT 400.

Includes actual flying of radar and JATO equipped DC-3 aircraft. Emphasis is placed on developing skill and safe operating practices in all areas—i.e., departures, enroute flying, let-downs, and approaches.

AT 402. DC-3 FLIGHT II. Class 3, cr. 3. Prerequisite: AT 401.

Continuation of AT 401.

AT 403. DC-3 FLIGHT III. Class 3, cr. 3. Prerequisite: AT 402.

Continuation of AT 402.

AT 404. FLIGHT PLANNING AND MANAGEMENT I. Class 2, cr. 2. Prerequisite: AT 324. Corequisite: AT 401.

Consists of actual planning of flights and use of necessary forms, weight and balance computations, and publications.

AT 405. FLIGHT PLANNING AND MANAGEMENT II. Class 2, cr. 2. Prerequisite: AT 404. Corequisite: AT 402.

Continuation of AT 404.

AT 406. FLIGHT PLANNING AND MANAGEMENT III. Class 2, cr. 2. Prerequisite: AT 405. Corequisite: AT 403.

Continuation of AT 405.

AT 407. OPERATIONS LAB. I. Lab. 5, cr. 2. Prerequisite: AT 120 or equivalent. Corequisite: AT 401.

Lab enables student to participate in actual air carrier facility operation. Students post and analyze teletype weather reports, weather facsimile charts and handle radio communications along with other general operations functions.

AT 408. OPERATIONS LAB. II. Lab. 5, cr. 2. Prerequisites: AT 407. Corequisite: AT 403.

Continuation of AT 407.

AT 409. OPERATIONS LAB. III. Lab. 5, cr. 2. Prerequisite: AT 408. Corequisite: AT 403.

Continuation of AT 408.

AT 410. AIRLINE TRANSPORT PROCEDURES. Class 2, cr. 2.

Review of appropriate regulations, radio, navigational, meteorological, and operations principles and procedures applicable to airline transport piloting.

AT 414. DC-6B FLIGHT ENGINEERING I. Class 1, cr. 1. Corequisite: AT 401.

Student will receive instruction in DC-6B aircraft on normal and emergency operations procedures. He will at all times be under the supervision of an instructing flight engineer.

AT 415. DC-6B NORMAL AND EMERGENCY OPERATIONS. Class 5, cr. 5. Prerequisite: AT 328.

Study of operation and trouble shooting of all aircraft systems, use and trouble shooting of all engines systems, and meteorology applicable to engine power and propeller emergencies are also discussed.

AT 417. DC-6B FLIGHT ENGINEERING II. Class 1, cr. 1. Prerequisite: AT 414. Corequisite: AT 402.

Continuation of AT 414.

AT 418. FLIGHT ENGINEERING PROCEDURE I. Class 3, cr. 3. Prerequisites: AT 415, 424.

Review of appropriate regulations; principles of flight, aircraft, and engine performance; computations; meteorology; weight and balance; and basic maintenance procedures applicable to flight engineering.

AT 419. DC-6B FLIGHT ENGINEERING III. Class 1, cr. 1. Prerequisite: AT 417. Corequisite: AT 403.

Continuation of AT 417.

AT 420. AIRWAYS PROCEDURES III. Class 1, cr. 1. Prerequisite: AT 322.

Continuation of AT 322.

AT 421. AIRWAYS PROCEDURES IV. Class 1, cr. 1. Prerequisite: AT 420.

Continuation of AT 420.

AT 422. AIRWAYS PROCEDURES V. Class 1, cr. 1. Prerequisite: AT 421.

Continuation of AT 421.

AT 423. FLIGHT ENGINEERING PROCEDURES II. Class 3, cr. 3. Prerequisite: AT 418.

Continuation of AT 418.

AT 424. DC-6B AIRCRAFT AND ENGINE FAMILIARIZATION I. Class 1, cr. 1. Prerequisite: AT 328.

Introduction to the specifications, construction features, controls, engines, systems, instrumentation, and emergency equipment of the DC-6B airplane.

AT 425. DC-6B TRAINER I. Class 1, cr. 1. Corequisite: AT 415.

First of three courses designed to thoroughly familiarize student with cockpit layout, and normal and emergency operating procedures of DC-6B aircraft through the use of DC-6B simulator.

AT 426. DC-6B AIRCRAFT AND ENGINE FAMILIARIZATION II. Class 6, cr. 6.

Continuation of AT 424. Emphasis is placed on more detailed analysis and study of those areas discussed in AT 411.

AT 427. DC-6B TRAINER II. Class 1, cr. 1. Prerequisite: AT 425. Corequisite: AT 426.

Continuation of AT 425.

AT 428. DC-6B TRAINER III. Class 1, cr. 1. Prerequisite: AT 427. Corequisite: AT 423.

Continuation of AT 427.

CHEMICAL TECHNOLOGY

W. E. Thomas, in charge of curriculum and Head of Department of Manufacturing Technology

UNDERGRADUATE LEVEL

Lower-Division Courses

CHT 109. GENERAL CHEMISTRY. Class 3, Lab. 3, cr. 4.

A one-semester general chemistry course intended for technology students.

CHT 201. UNIT OPERATIONS I. Class 3, cr. 3. Prerequisite: MA 150.

This course will acquaint the student with chemical process equipment, its use, and its applications. It focuses study on the principles, materials, systems of equipment, and some of the problems involved in chemical manufacturing processing. Chemical plant operations such as filtration, evaporation, drying, crystallization, solvent extraction, and distillation and fluid handling are described and discussed.

CHT 202. UNIT OPERATIONS II. Class 3, cr. 3. Prerequisite: CHT 201.

A continuation of Unit Operations I.

CHT 212. INDUSTRIAL CHEMISTRY: QUALITATIVE. Class 2, Lab. 6, cr. 4. Prerequisite: CHM 109 and MA 150 (or equivalent).

Systematic semimicro-analysis, with emphasis upon modern industrial techniques.

CHT 225. QUANTITATIVE ANALYSIS, INSTRUMENTAL. Class 3, Lab. 3, cr. 4. Prerequisite: CHM 224.

A continuation of the study of the chemical methods applied in quantitative analysis. Emphasis in this course is on oxidation-reduction reactions, precipitation titrimetry, and the analysis of multicomponent materials. The use of instrumental methods for performing analyses is introduced after the traditional methods have been covered. Emphasis will be upon application, limitations, and common errors in the methods, rather than upon the design, operation, and servicing of specific instruments.

CHT 251. ORGANIC CHEMISTRY. Class 4, Lab. 3, cr. 5.

A one-semester organic chemistry course intended for technology students.

CHT 252. INDUSTRIAL CHEMISTRY: QUANTITATIVE. Class 2, Lab. 6, cr. 4. Prerequisite: CHT 212.

CHT 273. PHYSICAL CHEMISTRY OF MATERIALS. Class 3, cr. 3.

An introductory treatment of the general properties of gases, liquids, and solids and the factors influencing them under extremes of temperature and pressure. This course is specifically designed for technology students.

CIVIL ENGINEERING TECHNOLOGY

D. D. Moss, in charge of curriculum and Head of Department of Construction Technology

Professors: (Lafayette) J. G. McEntyre, Ph.D.; D. D. Moss, Ph.D.

Associate Professor: (Fort Wayne) L. W. Smith, B.S.C.E.

Assistant Professors: (Calumet) D. E. Cochran, M.S.; (Indianapolis) R. J. Beck, M.S.C.E.; P. L. Douglass, M.S.C.E.; (Fort Wayne) R. G. Hoehn, B.S.; (North Central) R. L. Taylor, M.S.C.E.

Instructor: (Calumet) Ralph E. Bennett, B.S.

UNDERGRADUATE LEVEL

Lower-Division Courses

CET 100. TECHNICAL COMPUTATIONS. Class 3, cr. 3.

A study of elements from algebra and trigonometry appropriate to surveying and construction, and of related computational methods including slide rule, logarithms, calculator, and computer.

CET 104. ELEMENTARY SURVEYING. Class 2, Lab. 3, cr. 3. Prerequisite or corequisite: MA 112, 150, or equivalent.

Measurement of distances, directions and angles, using the tape, level, compass, and transit. Computation of areas and traverses, lines and grades.

CET 160. STATICS. Class 3, cr. 3. Prerequisite or corequisite: GNT 136.

Study of force action on bodies at rest. Coplanar and non-coplanar forces, concurrent and non-concurrent forces, friction forces, hydrostatic forces, controids and monuments of inertia, will be studied. An introduction to dynamic forces will be included.

CET 198. CONSTRUCTION PRACTICE I. Cr. 1.

Practical experience in the construction industry with written reports of this experience for co-op students.

CET 208. ROUTE SURVEYING. Class 1, Lab. 3, cr. 2. Prerequisite: CET 104.

Preliminary and construction surveys for highways and railroads, including simple, compound, reverse, and easement curves, super-elevation of curves, profiles, grade lines, slope stakes, yardage estimates, and mass and haul diagrams.

CET 209. LAND SURVEYING AND SUBDIVISION. Class 1, Lab. 6, cr. 3. Prerequisite: CET 104.

Theory and practice of land surveying, subdivision, filing and recording deeds, United States governmental survey of public lands, laws of land surveying, descriptions and area computations for land surveys. Subdivision planning, calculations and plotting, water main layouts, storm and sanitary sewer calculations and layouts. Street plans and profiles.

CET 253. HYDRAULICS AND DRAINAGE. Class 3, cr. 3. Prerequisite: GNT 136.

Basic fluid statics, Bernoulli's equation, flow of fluids in water lines and sewer lines, overland and ditch drainage and culvert size determination.

CET 260. STRENGTH OF MATERIALS. Class 3, cr. 3. Prerequisite: CET 160.

Study of stress-strain relationships, shear and bending moment diagrams, stresses and deflections of beams, axial loads, and combined stresses. Applied problems in the field of structural design.

CET 266. MATERIALS TESTING. Class 1, Lab. 6, cr. 3. Prerequisite or corequisite: CET 260 or MET 212.

Testing of construction materials to determine physical and mechanical properties. Preparation of reports from data secured from such tests.

CET 274. LAND SUBDIVISION. Class 1, Lab. 3, cr. 2. Prerequisite: CET 104.

Subdivision planning, calculations and plotting, water main layouts, storm and sanitary sewer calculations and layouts, street plans and profiles.

CET 280. STRUCTURES I. Class 1, Lab. 6, cr. 3. Prerequisite or corequisite: CET 260 or MET 212.

Graphic analysis of trusses and beams,

including stress diagrams, graphical shear and bending moment diagrams, and sizing of structural members.

CET 281. STRUCTURES II. Class 3, cr. 3. Prerequisite: CET 260 or MET 212.

Design of wood and steel frame structures including shear and bending moment diagrams, influence lines, sizing beams, columns and connections, computation of deflections and combined stresses and approximate methods.

CET 282. STRUCTURAL DRAFTING. Class 1, Lab. 6, cr. 3. Prerequisites: CET 260 or MET 212, and EG 110 or ART 222.

Detailing simple structural steel, reinforced concrete and wood structures, elementary design principles.

CET 298. CONSTRUCTION PRACTICE II. Cr. 1. Practical experience in the construction industry with written reports of this experience for co-op students.

CET 299. CIVIL ENGINEERING TECHNOLOGY. Cr. 1-4.

Hours to be arranged with the staff. Primarily for third and fourth semester students. Subject matter to be assigned by the staff.

UNDERGRADUATE LEVEL

Upper-Division Courses

CET 309. SUBDIVISION PLANNING. Class 1, Lab. 6, cr. 3. Prerequisite: CET 104. Not open to students with credit in CET 209.

Subdivision planning, calculations and plotting; street plans and profiles; and sewer layouts. Theory and practice of land surveying, laws of land surveying, filing and recording of deeds, and area computations for land surveys.

CET 344. CONSTRUCTION INSPECTION. Class 2, Lab. 3, cr. 3. Prerequisite: ART 276.

Inspection procedures as applied to contracted construction, and the role inspection plays in the execution of the completed contract. The laboratory period is for field trips to construction sites.

CET 366. MATERIALS TESTING II. Class 1, Lab. 6, cr. 3. Prerequisite: CET 266.

An introduction to testing structural elements and complete structures. Strain gauge measurements, instrumentation, and the design of tests to eliminate variables. Statistical analysis of test data.

CET 386. REINFORCED CONCRETE. Class 4, cr. 4. Prerequisites: MET 212 or CET 260.

Study of the properties of reinforced concrete and its ability to carry stresses. Fundamentals of reinforced concrete design as applied to beams, slabs, columns, walls, and footings.

CET 398. CONSTRUCTION PRACTICE III. Cr. 1. Practical experience in the construction industry with written reports of this experience for co-op students.

CET 431. APPLIED SOIL MECHANICS. Class 2, Lab. 3, cr. 3. Prerequisites: CET 260 or MET 212.

Fundamentals of soil mechanics with emphasis on laboratory and field testing for application to problems in foundation design, highway subgrade compaction, and drainage.

CET 441. CONSTRUCTION METHODS. Class 3, cr. 3. Prerequisite: Junior or senior standing.

Construction methods and equipment used in building construction, earthwork, bridges, and roads. Topics include: excavation, formwork, concreting, steel erection, masonry, scheduling, job management, and safety.

CET 442. CONSTRUCTION COSTS AND BIDDING. Class 2, Lab. 3, cr. 3. Prerequisites: CET 441 and IET 250.

Estimating total job costs, and the bidding practices of the construction industry. Topics include: unit costs of materials and labor, quantity survey, overhead, sub-contracts, total estimated cost, and bid price. The laboratory period is for the development of costs for an actual job.

CET 498. CONSTRUCTION PRACTICE IV. Cr. 1. Practical experience in the construction industry with written reports of this experience for co-op students.

CET 499. CIVIL ENGINEERING TECHNOLOGY. Cr. 1-4.

Hours, subject matter, and credit to be arranged by staff. Course may be repeated for credit up to nine hours.

COMPUTER TECHNOLOGY

Associate Professors: (Calumet) A. J. Adams, M.S.I.E.; J. Maniotes, Ph.D.; H. B. Von Horn, M.S.; (Indianapolis) J. F. Dalphin, M.S.; (North Central) L. F. Boness, M.B.A.

Assistant Professors: (Calumet) H. B. Higley, M.S.; D. R. Kurtz, M.B.A.; J. S. Quasney, M.S.; S. M. Rados, M.S.E.E.; (Fort Wayne) J. T. Gorgone, M.A.; D. E. Keck, M.A.; (Indianapolis) O. L. Clamp, M.A.T.; G. T. Forget, M.S.; N. J. Kira III, M.S.; P. M. McLear, M.S.; R. F. Randall, M.A.; J. G. Williams, Jr., B.S.; (North W. H. Evans, M.S.; J. F. Gallagher, B.A.

Instructors: (Fort Wayne) D. W. Osborn, B.S.; (Indianapolis) M. R. Ala, M.B.A.

PERSONAL SERVICE COURSES

Students successfully completing personal service courses numbered 1 through 99 earn certificate units and not University credit.

CPT 64. INTRODUCTION TO COMPUTER PROGRAMMING. Class 1, Lab. 1, cert. units 1.

The writing of programs to solve problems on the computer in the language FORTRAN. The laboratory period is used to process programs through the computer.

UNDERGRADUATE LEVEL

Lower-Division Courses

CPT 100. COMPUTER UTILIZATION. Class 2, Lab. 3, cr. 3.

An introduction to data processing techniques through the use of unit record and high-speed computer equipment. Emphasis will be on how computers can assist the technologist. Theory will be reinforced by laboratory demonstration. One laboratory hour will be scheduled; two laboratory hours will be arranged.

CPT 101. INTRODUCTION TO COMPUTERS. Class 3, cr. 3.

An introduction to computers and data processing. The historical development of unit record equipment and electronic digital computers; a brief introduction to machine language, assembly language, FORTRAN, and COBOL programming; and a survey of computer applications.

CPT 111. UNIT RECORD DATA PROCESSING. Class 2, Lab. 2, cr. 3.

This course illustrates the concept, power, and flexibility of the unit record and the need for machines in accounting and record keeping. The importance and the scope of unit record equipment as an independent system will be developed throughout the course. Laboratory exercises will involve the card punch, verifier, sorter, interpreter, reproducing punch, collator, accounting machine, and calculator. Practical exercises offered will involve planning and wiring a range of unit record equipment and will be typical of those performed in the existing electronic accounting machine installations.

CPT 122. COMPUTER MATH. Class 3, cr. 3. Prerequisite: MA 147 or 150.

Selected topics in mathematics that are related to business and computer computations. Topics include: symbolic logic, binary, octal, and hexadecimal number systems; determinants; matrices; and linear systems.

CPT 131. ASSEMBLY LANGUAGE PROGRAMMING I. Class 2, Lab. 2, cr. 3. Prerequisite: CPT 101.

Programming of a digital computer at the machine language and assembly language levels with emphasis on the meticulous step by step development of a program. Topics include: computer hardware, stored program concepts, operation codes addresses, flow diagrams and assembly language translators. In the laboratory students, write, process, and debug programs using the computer on an open shop basis.

CPT 132. ASSEMBLY LANGUAGE PROGRAMMING II. Class 2, Lab. 2, cr. 3. Prerequisite: CPT 131.

Advanced symbolic programming techniques, programming exercises, and case studies are designed to familiarize the student with actual programming practices and to bridge the gap from the theoretical to the real world of data processing.

CPT 198. DATA PROCESSING PRACTICE I. Cr. 1. Practice in industry with written re-

ports of this practice for co-op students. May be repeated once.

CPT 200. COMPUTER PROGRAMMING FUNDAMENTALS. Class 2, Lab. 2, cr. 3.
The presentation of the basic elements of programming digital computers. There is a treatment of absolute and symbolic coding, magnetic tape functions, and random access processing. Major emphasis will be on compiler language (FORTRAN) programming.

CPT 220. NUMERICAL ANALYSIS I. Class 2, Lab. 2, cr. 3. Prerequisites: CPT 264 and MA 221.
Numerical methods necessary for finding solutions to mathematical equations and for analysis of tabulated data. A laboratory course consisting chiefly of the solution of specific problems by computer programming and other methods. Topics include: iterative and direct solutions of linear equations, matrix operations, integration techniques, and error analysis.

CPT 225. STATISTICAL METHODS. Class 3, cr. 3. Prerequisite or corequsite: CPT 264.
An introduction to elementary statistics with emphasis on the analysis of actual data. Topics include: description and representation of sample data, probability, theoretical distributions, sampling, estimating, correlation, regression, and computer statistical routines.

CPT 254. COMMERCIAL SYSTEMS APPLICATIONS. Class 3, cr. 3. Prerequisites: CPT 131, IET 104, INDM 200.
An introduction to commercial data processing principles and practices as related to computer-oriented systems. A study of the basic concepts, flowcharting, forms design, and writing of procedures for the major application areas including payroll, accounts receivable, accounts payable, and inventory control.

CPT 264. FORTRAN PROGRAMMING. Class 2, Lab. 2, cr. 3. Prerequisite: CPT 131. Prerequisite or corequisite: CPT 122.
The structure and details of FORTRAN, a mathematically oriented compiler language. Numerous problems are solved on the computer to demonstrate the many facets of the language.

CPT 265. COBOL PROGRAMMING. Class 2, Lab. 2, cr. 3. Prerequisite: CPT 131.
A study of two programming languages, COBOL and Report Program Generator, which are oriented toward data handling and processing tasks. The student will study the structure and details of these languages and perform programming exercises as well as consider practical applications.

CPT 284. UTILITY PROGRAMS. Class 2, Lab. 2, cr. 3. Prerequisites: CPT 131 and 264.
This course is designed to familiarize the student with existing programs normally found in operating data processing centers. These include sort/merge routines, supervisory routines, report generators, random access utility programs, magnetic tape routines, etc.

CPT 286. COMPUTER OPERATING SYSTEMS I. Class 2, Lab. 2, cr. 3. Prerequisite: CPT 132.
An introduction to the operating system of a computer. Topics include: job control monitor, program supervisor, language compilers, and utility programs.

CPT 290. COMPUTER PROJECT. Cr. 1-4.
Independent study for sophomore students who desire to execute a complete computer-oriented project. Course may be repeated for credit up to six hours

CPT 294. COMPUTER SEMINAR AND FIELD TRIPS. Cr. 1.
A survey of a wide variety of computers currently in use. Lectures cover the latest innovations in computer hardware. Field trips are taken to inspect various types of computer installations.

CPT 298. DATA PROCESSING PRACTICE II. Cr. 1.
Practice in industry with written reports of this practice for co-op students. May be repeated once.

CPT 299. COMPUTER TECHNOLOGY. Cr. 1-4.
Hours, credit and subject matter to be arranged by staff. May be repeated for credit up to nine hours.

UNDERGRADUATE LEVEL
Upper-Division Courses

CPT 300. INTRODUCTION TO COMPUTERS. Class 3, cr. 3.
A broad survey of computers, data processing, and applications. Punched cards preparation, unit record equipment, computer hardware, and programming principles and languages. Applications emphasize how the computer is used as a tool to assist the user.

CPT 320. NUMERICAL METHODS II. Class 3, cr. 3. Prerequisites: CPT 220 and MA 222.
A continuation of CPT 220. Topics include: finite difference calculus, finite difference equations, differentiation techniques, and error analysis applied to these techniques.

CPT 340. DATA COMMUNICATIONS. Class 2, Lab. 2, cr. 3. Prerequisite: CPT 132.
The role of data communications in modern computation. Real time systems and data transmission. Topics include: terminal equipment, communication media, data codes, error detection and correction, and terminal software.

CPT 345. COMPUTER GRAPHICS. Class 2, cr. 2. Prerequisite: An introductory computer course.
A survey of computer hardware used to make graphic displays including printer, plotter, and cathode rays tube. Programming techniques for plotting lines and special symbols, the organization and representation of data, and a survey of applications.

CPT 354. MANAGEMENT INFORMATION SYSTEMS. Class 2, Lab 2, cr. 3. Prerequisites: CPT 254 and 265.
The processing of data in an integrated management information system environment with emphasis on the source, flow, dissemination, and interrelationship of data required for various operational areas of an industrial organization. The laboratory period is used for programming (in COBOL) and documentation of practical problems in management information systems.

CPT 360. COMPILER LANGUAGES. Class 3, cr. 3. Prerequisite: CPT 264 and 265.
The detailed structure of several compiler languages and their applications. Languages include PL/1, ALGOL, and others.

CPT 364. TOPICS IN FORTRAN. Class 3, cr. 3. Prerequisites: CPT 264 and MA 222.
A continuation of CPT 264. Dialects of FORTRAN with emphasis on FORTRAN IV, FORTRAN compilers, computational methods, and applications in various technical and commercial areas.

CPT 386. COMPUTER OPERATING SYSTEMS II. Class 2, Lab. 2, cr. 3. Prerequisite: CPT 286.
A continuation of CPT 286 with emphasis on systems generation, control languages, and time-sharing.

CPT 396. COMPUTER LABORATORY. Lab. 1-6, cr. 1-2.
Applied computer laboratory experiences carried out on an independent study basis in conjunction with other courses, assignments, or problems.

CPT 398. DATA PROCESSING PRACTICE III. Cr. 1.
Practice in industry with written reports of this practice for co-op students. May be repeated once.

CPT 480. COMPUTER SYSTEM PLANNING. Class 3, cr. 3. Prerequisites: CPT 354 and INDM 360.
The planning and design of computer systems, including the formulation of corporate requirements, configuration of hardware to satisfy stated requirements, comparison and evaluation of equipment, installation considerations, and implementation procedures.

CPT 490. SENIOR PROJECT. Cr. 1-4.
Independent study for seniors who desire to execute a complete computer oriented project. Course may be repeated for credit up to six hours.

CPT 498. DATA PROCESSING PRACTICE IV. Cr. 1.
Practice in industry with written reports of this practice for co-op students. May be repeated once.

CPT 499. COMPUTER TECHNOLOGY. Cr. 1-4.
Hours, credit, and subject matter to be arranged by staff. May be repeated for credit up to six hours.

ELECTRICAL ENGINEERING TECHNOLOGY

G. L. Rainey, Head of the Department

Professors: (Calumet) R. L. Anderson, B.S.; L. E. Brunner, M.S.; (Lafayette) G. L. Rainey, M.S.E.E.

Associate Professors: (Calumet) J. C. Rapal, M.Ed.; K. H. Steiner, M.; (Fort Wayne) H. W. Gates, M.S.; F. R. Gideon, M.S.; D E. Nold, M.S.E.; H. G. Nordlin, M.S.E.E.; (Indianapolis) F. E. Burley, M.S.E.E.; B. J. Keller, M.S.; P. K. Sharp, M.S.E.E.; (Lafayette) V. W. Hoeche, M.Ed.; C. E. Lentz, M.S.; M. D. Roberts, M.S.

Assistant Professors: (Calumet) Sin-Ban Jen, M.S.; B. Z. Jovanovich, M.S.; C. R. Sekhar, M.S.E.E.; N. M. Sorak, M.S.; R. K. Vanweelden, M.S.; T. M. Yackish, M.S.E.E.; (Fort Wayne) O. R. Detraz, M.S.E.E.; R. C. Emery, M.S.E.E.; (Indianapolis) M. Needler, M.S.; R. E. Warren, M.S.; (Kokomo) M. T. O'Hair, M.S.; N. L. Poulton, M.S.E.E.; (Lafayette) R. C. Hubele, B.S.; W. R. Naylor, M.S.; G. A. Rath, M.S.E.; W. F. Reeve, M.S.; W. J. Sensing, B.S.; (North Central) G. L. Kvitek, M.S.E.E.; W. L. Stoakes, M.S.E.E.

Instructors: (Calumet) H. I. Lee, B.S.E.E.; W. W. Reed, Jr., A.A.S.; R. L. Schneider, B.S.E.E.; E. L. Stillman, B.S.E.E.; (Indianapolis) J. P. Benejam, B.S.E.E.; D.E. Smith, M.S.; T. Willison, M.S.

PERSONAL SERVICE COURSES

Students successfully completing personal service courses numbered 1 through 99 earn certificate units and not University credit.

EET 9. LABORATORY V. Lab. 2, cert. units 1. Corequisites: EET 64, 72, and EET 80.

Part I of two parts. Laboratories series designed to complement the materials of equipping courses.

EET 10. LABORATORY VI. Lab 2, cert. units 1. Prerequisite: EET 9; corequisites: EET 65, 73, and 81.

Part II of two parts. Continuation of EET 9.

EET 15. BASIC ELECTRICITY. Class 2, Lab. 4, cert. units 4.

Basic electrical terms, units, symbols, and schematics are discussed. Equipment such as voltmeters, ohmmeters, ammeters, generators, and oscilloscopes are demonstrated. Magnetism, inductance, capacitance series and parallel circuits are considered. Basic principles of alternating current, capacitive reactance, inductive reactance, impedance, phrasors, power factor, and resonance are studied.

EET 16. BASIC ELECTRICITY I. Class 1, Lab. 2, cert. units 2.

A course in basic electricity that is designed primarily for the air-conditioning, heating, and refrigeration program. Basic electrical terms, units, symbols, components, schematics, Ohm's Law, series circuits, parallel circuits, magnetism, inductance, and capacitance are studied. The use of measuring and test instruments such as voltmeters, ohmmeters, and ammeters is stressed in the practical laboratory.

EET 17. BASIC ELECTRICITY II. Class 1, Lab 2, cert. units 2.

A continuation of EET 17, which is designed primarily for the air conditioning, heating, and refrigeration program. Basic principles of alternating current, motors, generators, transformers, fuses, disconnects, relays, pressure cutouts, starters, temperature controls, and pressure controls are studied. The practical laboratory stresses measurements and trouble shooting.

EET 23. TRANSISTOR AND VACUUM TUBE FUNOAMENTALS. Class 2, Lab. 4, cert. units 4.

Transistor fundamentals, semiconductor diodes, vacuum tube diodes, triodes, tetrodes, pentodes are discussed. The use of oscilloscopes, audio oscillators, and voltmeters in electronic circuits such as amplifiers, power supplies, and oscillators is considered.

EET 24. UNDERSTANDING YOUR RADIO AND TV. Lab. 2, cert. units 1 (15 weeks).

Introduction to basic electronics. Circuit analysis, troubleshooting and repair of radio, television, and allied equipment. Previous experience unnecessary.

EET 33. APPLIED ELECTRONICS. Lab 2, cert. units 1 (15 weeks). Prerequisite: EET 24.

Basic principles, analysis, troubleshooting, and repair of common circuits which are used in radio, television, industrial controls, and computers. "Bench work" will be stressed with emphasis on the proper use of test equipment.

EET 36. ELECTRICAL BLUEPRINTS AND DIAGRAMS. Class 2, cert. units 2.

A study of blueprints and diagrams related to electrical systems and controls normally used in steel mills.

EET 38. DC CIRCUITS. Class 3, Lab. 2, cert. units 4.

A brief consideration of direct current circuit theory and application consistent with modern steel mills requirements.

EET 39. ELECTRONIC CIRCUITS. Class 2, Lab. 4, cert. units 4.

Transistors and vacuum tubes used in circuits are considered. Power supply circuits, audio amplifiers, RF amplifiers, oscillators, modulation, AM transmitters and receivers, FM transmitters and receivers are discussed. Special electronic circuits such as clippers, clampers, multivibrators, blocking oscillators, sweep circuits are studied. Trouble shooting techniques are emphasized.

EET 40. DC CIRCUITS AND MACHINES. Class 3, Lab. 2, cert. units 4.

DC machines and apparatus from the viewpoint of construction details, industrial application, and methods of operation.

EET 41. ELECTRONIC CONTROL CIRCUITS. Class 2, Lab. 4, cert. units 4.

Rotating electrical machinery and control circuits, servomechanism components such as error detectors, amplifiers, detectors, magnetic amplifiers are considered. Specialized electronic control circuits are discussed.

EET 45. COMMUNICATIONS ELECTRONICS. Class 2, Lab. 4, cert. units 4.

Principles of television, UHF, microwaves, transmitters and receivers, FCC exam information, trouble shooting techniques are considered.

EET 51. ELECTRONIC INSTRUMENTATION ANO SYSTEMS. Class 2, Lab. 4, cert. units 4.

Study of electronic instruments, recorders, controllers, sensing devices, transducers used in open and closed loop systems, maintenance, trouble shooting, adjustment, and calibration is stressed.

EET 52. AC CIRCUITS. Class 3, Lab. 2, cert. units 4. Prerequisite: EET 40.

Nature of alternating current, methods of generation, single-phase currents, polyphase currents; practical concepts of power, power-factor, reactive factor, reactance, and impedance; simple AC circuit calculations.

EET 56. BASIC ELECTRONICS AND ELECTRICAL CIRCUITS. Class 2, cert. units 2.

Practical fundamentals of electrical circuits and electronics.

EET 60. AC MACHINES. Class 3, Lab. 2, cert. units 4. Prerequisite: EET 52.

Construction details and practical performance of transformers, induction motors, alternators, synchronous motors, rectifiers, and other common alternating current apparatus.

EET 64. POWER DISTRIBUTION AND PROTECTIVE RELAYING I. Class 1, cert. units 1. Prerequisite: EET 60 or equivalent.

Part I of two parts. Emphasis on industrial power systems function and protection.

EET 65. POWER DISTRIBUTION AND PROTECTIVE RELAYING II. Class 1, cert. units 1. Prerequisite: EET 64.

Continuation of EET 64. Industrial power systems, function, and protection.

EET 68. MOTOR CONTROL. Class 3, cert. units 3.

Application of controllers for electric motors used in the steel industry.

EET 72. AUTOMATION: DEVICES. Class 3, cert. units 3. Prerequisites: EET 60 and 76, or equivalent.

Operation principles of regulations and control system components.

EET 73. AUTOMATION: SYSTEMS. Class 2, cert. units 2. Prerequisite: EET 72.

Study of selected processes, control, and loop systems.

EET 76. BASIC ELECTRONICS. Class 3, cert. units 3.

A survey of electronics as it applies to controls used in industry.

EET 78. ELECTRICAL MAINTENANCE AND BLUEPRINTS. Class 3, Lab. 2, cert. units 4.

Discussions on scheduled inspection programs, trouble shooting, and preventive maintenance equipment used in the steel mill.

EET 80. ELECTRONICS: TUBES AND INDUSTRIAL APPLICATIONS. Class 2, cert. units 2. Prerequisite: EET 76 or equivalent.

Review of electronics with extended emphasis on industrial circuits.

EET 81. TRANSISTORS AND SOLID STATE DEVICES. Class 2, cert. units 2. Prerequisite: EET 80.

Semiconductor principles, characteristics, and applications.

EET 92. INDUSTRIAL ELECTRONICS. Class 2, cert. units 2.

Principles of operation and industrial applications of the common types of vacuum and gas tubes, photoelectric cells, and cathode ray tubes.

EET 93. TECHNICAL ADVANCEMENTS. Class 1, cert. units 1. Corequisites: EET 65 and 73.

Selected topics in sciences and technology.

UNDERGRADUATE LEVEL

Lower-Division Courses

EET 100. INTRODUCTORY ELECTRICAL ENGINEERING TECHNOLOGY. Class 4, cr. 4. Prerequisite or corequisite: MA 150.

Fundamentals of DC and AC electricity, magnetism, electromagnetism, wave motion, sound, and light.

EET 101. ELECTRICAL CIRCUITS I. Class 3, cr. 3. Prerequisite or corequisite: MA 150.

A study of DC and AC electrical circuits, Ohm's Law, Kirchhoff's Laws, series and parallel circuits, power, magnetic circuits, switches, relays, inductance, capacitance, alternating voltages and currents, transformers, reactance, impedance, phase relationships, resonance, and an introduction to network theorems.

EET 103. ELECTRONICS I: VACUUM TUBES AND TRANSISTORS. Class 2, cr. 2. Prerequisite or corequisite: EET 101 or equivalent.

Introduction to electron tubes, transistors, and solid state diodes. A study of the physical structure and materials as well as operation and static characteristics of the diode, triode, tetrode, and pentode vacuum tubes. A study of semiconductor materials, diodes, and transistor static characteristics and in introduction to amplifiers. Also orientation on university organization and industrial careers.

EET 106. INTRODUCTION TO COMPUTER FUNDAMENTALS. Class 3, cr. 3.

Reviews direct current and alternating current concepts and vacuum tube fundamentals. Surveys vacuum tube circuits, rectifiers, simple amplifiers, and fundamental oscillators. Review theory of transistors, basic transistor and semiconductor circuits, rectifiers, amplifiers, and oscillators. Deals with special types of transistors and bistable and multivibrator circuits. Introduces logic in electrical circuits, binary arithmetic. Boolean algebra, and the electronic flipflop circuit. Surveys binary counting circuit, ring circuits for timing, simple memory, analog arithmetic operations components, rheostats, synchros, and resolvers. Reviews analog to digital conversion circuits and input and readout devices.

EET 113. ELECTRICAL ENGINEERING TECHNOLOGY LABORATORY I. Lab. 6, cr. 2. Prerequisites or corequisites: EET 101 and 103.

The first of a sequence of practical laboratory courses designed to develop technical skills and techniques in circuit construction, instrument operation, testing, measuring, troubleshooting, and circuit analysis. Instruments such as ammeters, voltmeters, ohmeters, DC bridges, and oscilloscopes are used in DC and AC circuits.

EET 151. ELECTRICAL CIRCUITS II. Class 3, cr. 3. Prerequisite: EET 113 and prerequisite or corequisite: MA 223A.

A continuation of EET 101. The study of inductance; capacitance; network theorems; AC circuits using phrasers, rectangular and polar forms; transformers; coupled circuits; nonsinusoidal voltages; transients; and polyphase circuits.

EET 153. ELECTRONICS II. Class 3, cr. 3. Prerequisite or corequisite: EET 151 and MA 221. Prerequisite: EET 103.

The application of electron tubes, transistors and other solid state devices in electronic circuits. A study of rectifiers, equivalent circuits, voltage amplifiers, tuned amplifiers, oscillators, and diode logic circuits. Introduction to AM and FM receivers and transmitters.

EET 163. ELECTRICAL ENGINEERING TECHNOLOGY LABORATORY II. Lab. 6, cr. 2. Prerequisite or corequisite: EET 153.

The second of a sequence of practical laboratory courses designed to develop technical skills and techniques in circuit construction, testing, instrument operation, measuring, troubleshooting and circuit analysis. Experimental work on transistor and electron tube circuits, DC and AC networks, and electromechanical devices; using ammeters, voltmeters, wattmeters, oscilloscopes, signal generators, wavemeters, frequency meters, and bridges.

EET 203. ELECTRONICS III. Class 3, cr. 3. Prerequisite: EET 163.

The study of regulated power supplies, polyphase rectifiers, filters, AM receivers and transmitters, FM receivers and transmitters, waveshaping, clippers, clampers, peakers, multivibrators, blocking oscillators, and logic circuits.

EET 205. CIRCUIT FUNDAMENTALS. Class 2, Lab. 2, cr. 3. Prerequisite: GNT 176.

Deals with special types of transistors and bistable and multivibrator circuits. Introduces logic in electrical circuits, binary arithmetic, Boolean algebra, and the electronic flipflop circuit. Surveys binary counting circuits, ring circuits for timing, simple memory, analog arithmetic operations components, rheostats, synchros, and resolvers. Reviews analog to digital conversion circuits, and input and output devices.

EET 211. ELECTRIC MACHINERY. Class 3, cr. 3. Prerequisite: EET 163.

A first course in machinery including small generators and motors as related to applications in electronic and servo systems. The study of DC machines and AC single- and multi-phase synchronous and induction machines.

EET 213. ELECTRICAL ENGINEERING TECHNOLOGY LABORATORY III. Lab. 6, cr. 2. Prerequisites or corequisites: EET 203 and 211.

The third of a sequence of practical laboratory courses designed to develop technical skills and techniques in circuit construction, testing, instrument operation, measuring, troubleshooting, and circuit analysis. Experimental work and measurements on power supply circuits, filters, receivers, transmitters, electrical machines, waveshaping circuits, sweep circuits logic circuits and commercial equipment and selected experiments from the student's specialty.

EET 214. ELECTRICITY FUNDAMENTALS. Sem. 1 and 2. Class 1, Lab. 4, cr. 2 (3 IED).

An introduction to the fundamentals of electricity; characteristics, operation, function and testing of basic electrical circuits.

EET 216. ELECTRICAL MACHINES AND CONTROLS. Class 3, cr. 3. Prerequisites: MA 150 and GNT 176 or equivalent.

Lecture, recitation, and demonstration are combined to acquaint the student with the elements of electrical circuits and machines as they are applied as component parts of machine drives and controls within the requirements of the National Electrical Code and in conformity to the ratings and dimensional specifications of NEMA. Manufacturers catalogs and pamphlets are used freely as classroom aids.

EET 250. CIRCUIT SYSTEMS ANALYSIS. Class 2, Lab 2, cr. 3. Prerequisite: EET 205.

Continuation of EET 205, Circuit Fundamentals.

EET 253. ELECTRONICS IV. Class 3, cr. 3. Prerequisite: EET 213.

A study of the applications of the fundamental electrical and electronic circuits in various specialty areas. Includes selected topics such as oscillators, synchronizing and sweep circuits, high-voltage power supplies, wide-band amplifiers, closed-loop feedback systems, transmission lines, UHF, VHF, radar, digital circuits, medical electronics, magnetic amplifiers, and lasers.

EET 263. ELECTRICAL ENGINEERING TECHNOLOGY LABORATORY IV. Lab. 3, cr. 1. Prerequisite or corequisite: EET 253.

Selected experiments to provide a broad technical background. Experiments are selected from specialty areas such as communications, electrical power, television, computers, medical electronics, automatic controls, and aviation electronics.

UNDERGRADUATE LEVEL

Upper-Division Courses

EET 301. ELEMENTS OF MACHINE CONTROL. Class 3, cr. 3. Prerequisite: EET 211.

The study of AC and DC machine controls. Includes relays, protective relays, circuit breakers, controllers, and contactors.

EET 302. ELECTRO-MECHANICAL CONTROL COMPONENTS. Class 3, cr. 3. Prerequisites or corequisites: EET 203 and 211.

A study of the components in open-loop and closed-loop systems. Included are sensing devices, error detectors, potentionmeters, synchros, resolves, modulators, demodulators, amplifiers, motors, generators, and networks. An analysis course that stresses operation, time- and

frequency-response characteristics, and proper adjustment of the components.

EET 303. COMMUNICATIONS I. Class 3, cr. 3. Prerequisite or corequisite: EET 203.

An advanced study of AM and FM modulation, receivers, transmitters, networks, filters, antennas, transmission lines, and television.

EET 306. TELEVISION I. Class 3, cr. 3. Prerequisite or corequisite: EET 213.

A study of television transmission and receiving system. Includes analysis of transmitted signal, FM, video amplifiers, power supplies, synchronization, deflection alignment, and antennas.

EET 307. PULSE CIRCUITS. Class 3, cr. 3. Prerequisite or corequisite: EET 203.

A study of waveshaping, pulse generation, switching, logic circuits used in digital computers, sweep circuits, and synchronization.

EET 321. GENERATION AND DISTRIBUTION OF ELECTRICAL POWER. Class 3, cr. 3. Prerequisite or corequisite: EET 211.

A study of the transmission and distribution of electrical energy from the generating station to the consumer. A study of the power plant, electrical power generation, transformers, distribution and transmission, and power system loading.

EET 322. ELECTRICAL CIRCUITS, CONTROLS, AND ROTATING EQUIPMENT. Sem. 1 and 2. Lab. 6, cr. 2 (5 IED, teaching option). Prerequisite: EET 214.

An introduction to types of nonelectronic equipment as found in the home and industrial arts laboratory. Emphasis will be placed upon construction, function, operation, maintenance, and application of circuits, controls, and machines.

EET 351. AUTOMATED POWER REGULATING SYSTEMS. Class 3, cr. 3. Prerequisite or corequisite: EET 211.

A study of systems used to control and regulate speed, torque, voltage, horsepower, frequency, etc., in heavy power equipment. Includes basic ideas of feedback loop; applications of rotating amplifiers such as Amplidyne, Rototrol, and others; magnetic amplifiers; and an introduction to solid-state control systems.

EET 352. INDUSTRIAL ELECTRONIC CIRCUITS. Class 3, cr. 3. Prerequisites or corequisites: EET 203 and 211.

The analysis of electronic circuits and devices found in manufacturing industries. Included are industrial electronic power supplies, gas tubes, controlled rectifiers, timing circuits, relays, solid-state switching devices, photo-electric devices, logic circuits, counters, magnetic amplifiers, induction heaters, ultra-sonics, and radiation inspection.

EET 353. COMMUNICATIONS II. Class 3, cr. 3. Prerequisite: EET 303. Prerequisite or corequisite: EET 253.

A continuation of EET 303. A study of different types of modulation, VHF and UHF techniques, and radar.

EET 354. ELECTRONIC INSTRUMENTATION. Class 3, cr. 3. Prerequisites or corequisites: MET 384 and EET 253.

A study of the electronic instruments and control systems used in the manufacturing and process industries for measurement and control of temperature, fluid flow, level, humidity, and physical dimension. Includes the analysis, operation, and calibration of sensing devices, recorders, controllers, analyzers, and counters that use vacuum tubes and semiconductor devices.

EET 356. TELEVISION II. Class 3, cr. 3. Prerequisite: EET 306.

A continuation of EET 306. A study of color transmitters and receivers. Principles of color vision, color combination, chromaticity, picture tubes, and receiver circuits.

EET 361. ELECTRICAL POWER BLUEPRINTS AND DRAFTING. Class 1, Lab. 3, cr. 2. Prerequisite or corequisite: EET 211.

Various types of power system blueprints and drawings related to the normal practices of representation of bus systems, substations, transmission, distribution arrangements, etc., to familiarize the student with current practice in the reading of power blueprints and diagrams.

EET 362. AUTOMATIC CONTROL SYSTEMS. Class 3, cr. 3. Prerequisite: EET 302.

The analysis of open- and closed-loop control systems. Includes types of control; stability and typical servomechanism operation; time and frequency response characteristics; adjustment, testing, and troubleshooting techniques.

EET 363. FCC EXAM PREPARATION. Class 1, cr. 1. Prerequisite: consent of instructor.

Review of electrical and electronic theory and the study of rules and regulations of the Federal Communications Commission to prepare for the first and second class FCC license. The FCC license is required for the operation and maintenance of many types of communications, broadcast, industrial, and aviation equipment.

EET 364. ELECTRICAL MEASUREMENTS. Class 3, cr. 3. Prerequisite or corequisite: EET 253.

An advanced study of electrical instruments used to measure electric and nonelectric quantities. Explains instrument limitations, calibration procedures, possible errors, and industrial applications. Includes the analysis of precision voltmeters, ammeters, AC and DC bridges, potentiometers, and frequency standards.

EET 366. TRANSISTORS AND SEMICONDUCTOR DEVICES. Class 3, cr. 3. Prerequisite or corequisite: EET 151 or equivalent. Not open to students with credit in EET 153.

A study of solid state physics, solid state diodes, controlled rectifiers, transistors, characteristic curves, bias techniques, parameters, equivalent circuits, small signal amplifiers, power amplifiers, and oscillators.

EET 371. ELECTRICAL MACHINERY LABORATORY. Class 1, Lab. 3, cr. 2. Prerequisites or corequisites: EET 301 and 321.

A laboratory course associated with the machinery courses to integrate the presentation and to instruct the student in the construction, testing, and operation of the equipment.

EET 372. CONTROL LABORATORY. Class 1, Lab. 3, cr. 2. Prerequisites or corequisites: EET 352 and 362.

A practical laboratory course that stresses testing, circuit analysis, adjustment, calibration, instrument operation, measuring, and troubleshooting. Experimental work on typical industrial devices, circuits, and systems such as DC power supplies, timing circuits, synchros, transistor amplifiers, magnetic amplifiers, control components, and experimental servomechanisms.

EET 373. COMMUNICATIONS LABORATORY. Class 1, Lab. 3, cr. 2. Prerequisite or corequisite: EET 353.

A practical laboratory course that stresses testing, circuit analysis, adjustment, calibration, operation, measuring, and troubleshooting. Experimental work on circuits, receivers, transmitters, networks, filters, and UHF measuring equipment.

EET 374. INSTRUMENTATION LABORATORY. Class 1, Lab 3, cr. 2. Prerequisites or corequisites: EET 354 and 364.

A practical laboratory course that stresses instrument construction, precision calibration, testing, and troubleshooting. Includes experiments in the measurement, recording, and control of temperature, fluid flow, and strain. Techniques used in instrument-calibration laboratories are stressed.

EET 376. ELECTRONIC TROUBLESHOOTING LABORATORY. Class 1, Lab. 3, cr. 2. Prerequisite or corequisite: EET 213.

Experimental work in analyzing and repairing equipment. The use of test instruments to locate faulty components in AM and FM receivers, television, and industrial circuits.

EET 381. CONTROL OF ELECTRIC MOTORS. Class 3, cr. 3.

A specialized study of the control of speed, acceleration, stopping, plugging, reversing, cycling, etc., of AC and DC motors in heavy industry applications.

EET 383. ADVANCED ELECTRICAL NETWORKS. Class 3, cr. 3. Prerequisites or corequisites: EET 213 and MA 222.

An advanced course in network analysis that stresses network theorems, solutions of time- and frequency-domain problems.

EET 386. TELEVISION LABORATORY. Class 1, Lab. 3, cr. 2. Prerequisite or corequisite: EET 356.

A practical laboratory course that stresses circuit analysis, adjustment, testing operation, and troubleshooting techniques. Experimental work on commercial television equipment.

EET 396. ELECTRICAL TECHNOLOGY. Class 2-4 and/or Lab. 3-9, cr. 1-7. Hours as arranged with staff. Special studies in electrical technology.

Primarily for students who have completed the requirements for the degree of Associate in Applied Science.

The primary objective of this course is to provide the advanced student with the opportunity to select and develop individual projects under the supervision of the staff. The student makes use of

the knowledge and the many techniques acquired in the basic two-year technology curriculum.

EET 402. ELECTRICITY IN THE HOME. Sem. 2. Class 1, Lab. 6, cr. 3 (7 HE).
Common household electrical problems, with emphasis on lighting, residential wiring, and the operation, structure, design and care of electrical appliances.

EET 423. ELECTRONICS FUNDAMENTALS. Sem. 1 and 2. Class 2, Lab. 3, cr. 3. (7 IED, teaching option). Prerequisite: EET 214.
Function and characteristics of vacuum tubes and transistors. Operation and analysis of basic electronic circuits. Methods of troubleshooting and servicing electronic equipment, including radio and television receivers.

EET 433. ELECTRONICS AND INDUSTRIAL CONTROLS. Class 2, Lab. 3, cr. 3. (7 IED, industrial option). Prerequisite: EET 214.
Familiarization with electronics as applied to industry. Basic theory and application of electronics to controls for industrial equipment and data processing.

EET 499. ELECTRICAL ENGINEERING TECHNOLOGY. Class 0-4, Lab. 3-9, cr. 1-9.
Hours and subject matter to be arranged by staff. Course may be repeated for credit up to nine hours.

GENERAL STUDIES

Denver Sams, Acting Head of the Department

Professors: (Calumet) T. D. Sherrard, M.A.; (Lafayette) D. R. Smith, Ph.D.; (North Central) R. F. Schwartz, M.S.

Professors Emeriti: E. H. Ernst, M.S.; C. J. Poling, M.A.

Assistant Professor: (Indianapolis) E. R. Cox, B.S.

Instructor: (Calumet) J. P. Cummings, B.A.

PERSONAL SERVICE COURSES

Students successfully completing personal service courses numbered 1 through 99 earn certificate units and not University credit.

GNT 6. READING IMPROVEMENT. Lab. 3, cert. units 1.
Helps students become more accurate and orderly in their reading. It furnishes the basic for good comprehension. Tachistoscopic and film materials are used.

GNT 7. VOCABULARY BUILDING. Lab. 3, cert. units 1.
Development of vocabulary through study of the characteristic of the language, usage, and word formation; exercises and dictionary practice; selected readings.

GNT 8. COMMUNICATION SKILLS. Class 3, cert. units 3.
A basic course designed to develop competence in written expression.

GNT 9. GENERAL COMMUNICATION SKILLS. Class 5, cert. units 5.
Emphasizes reading, writing, speaking, listening, and thinking as integrated elements of communication. The course aims to develop competence in communication skills necessary for college work and the practical needs of business and industry.

GNT 12. STUDY SKILLS. Class 1, cert. units 1.
Procedures and practices for the development of good study habits. Includes techniques for better listening, notetaking, textbook reading, time budgeting, and writing themes and reports.

GNT 20. TESTING, SELF-ANALYSIS, AND COUNSELING. Class 1, Lab. 3, cert. units 2.
Students take, score, and analyze results of selected objective tests. Each test is studied to determine its objectives, reliability and validity. Each student will develop a profile of himself based on what he learns from the tests.

GNT 40. PHYSICS: MECHANICS, HEAT, AND ELECTRICITY. Class 3, cert. units 3. Prerequisite: GNT 60.
Basic principles of mechanics, properties of materials, and selected elements of heat related to practical applications in steel mills. Includes units, vectors, torque, velocity and acceleration, force and motion, rotation of rigid bodies, uniform circular motion, friction, work and power, energy momentum, elastic properties of solids, liquids at rest, fluids in motion, properties of gases, and selected elements of heat. Emphasis on vectors, torque, and elastic properties of solids.

GNT 52. PHYSICS: MECHANICS AND ELECTRICITY. Class 4, cert. units 4.
Basic principles of mechanics and selected elements of electricity and magnetism. Basic principles are related to practical applications in steel mills. Covers vectors, torque, velocity and acceleration, force and motion, friction, work and power, energy, rotation of rigid bodies, momentum, uniform circular motion, vibratory motion, elastic properties of solids, liquids, fluids in motion, properties of gases, molecular theory of matter, static electricity, DC circuits, electrical energy and power, magnetism, electromagnetic induction, transformers, generators and motors, capacitance, alternating currents, and rectifiers.

GNT 54. INTRODUCTION TO GOVERNMENT. Class 3, cert. units 3.
A basic course in the development of government in the United States. Other democratic governments in the world are also included.

GNT 60. APPLIED MATHEMATICS III. Class 1-5, cert. units 1-5.
Fundamental concepts and techniques of algebra and trigonometry necessary for related courses and work.

UNDERGRADUATE LEVEL

Lower-Division Courses

GNT 110. IMPROVING STUDY TECHNIQUES. Class 1, cr. 1.
Emphasis is on taking and using notes; effective participation in class discussions; time management; using texts; predicting test questions; preparing for and taking examinations; knowing what and how to memorize; improving concentration; getting help from professors; and self-evaluation of progress in a course.

GNT 136. PHYSICS: MECHANICS AND HEAT. Lect. 2, Rec. 2, Lab. 2, cr. 4. Prerequisites or corequisites: MA 111 and 112 or 150.
Work, energy, power, efficiency of simple machines; equilibrium conditions for solids, liquids, and gases; straight line and rotational motion. Elementary principles of heat and their technical applications.

GNT 176. PHYSICS: ELECTRICITY, SOUND, AND LIGHT. Lect. 2, Rec. 2, Lab. 2, cr. 4. Prerequisite: GNT 136.
Fundamental principles of electricity, wave motion, sound, and light.

GNT 220. TECHNICAL REPORT WRITING. Class 3, cr. 3.
Extensive application of the principles of good writing in industrial reporting, with emphasis on the techniques of presenting information graphically as well as in a clear, concise written form.

INDUSTRIAL EDUCATION

Max Eddy, Head of the Department

Professors: (Lafayette) J. J. Carrel, Ed.D.; A. S. Drew, Ph.D.; Max Eddy, Ed.D.; D. L. Householder, Ed.D.; Denver Sams, Ed.D.

Professors Emeriti: H. S. Belman, M.A.; C. E. Highlen, M.Ed.; W. B. Hill, B.S.

Associate Professors: (Calumet) A. J. Parker, M.S. Ed.; (Fort Wayne) F. L. Bushong, M.S. (Lafayette) W. H. Mason, Ed.D.; H. E. McVicker, Ed.D.; W. A. Stanton, Ed.D.; A. R. Suess, Ed.D.

Assistant Professors: (Indianapolis) Edgar Fleenor, M.A. (Lafayette) H. W. Bennett, M.S.; L. D. Neher, M.S.; J. A. Nieminen, M.S.Ed.; N. M. Sievert, Ed.D.; D. N. Wheeler, Ph.D.

PERSONAL SERVICE COURSES

Students successfully completing personal service courses numbered 1 through 99 earn certificate units and not University credit

IED 18. MACHINE WOODWORKING. Lab. 3, cert. units 1 (12 weeks).

A basic course in the safe operation of the common woodworking machines. Class activities will include planning, construction, and finishing of *small* projects in wood. Instruction in any special operations on the machines will be available. Previous experience unnecessary.

IED 24. CREATIVITY IN THE GRAPHIC ARTS. Lab. 3, cert. units 1 (12 weeks).

An elementary course in graphic arts for avocational interests. Activities include hand cut and photo silk screen reproduction and letterpress printing with ample time for creativity with the various techniques. Previous experience unnecessary.

UNDERGRADUATE LEVEL

Lower-Division Courses

IED 110. INTRODUCTION TO INDUSTRIAL EDUCATION. Class 1, cr. 1.

Overview of industrial education with emphasis upon its function and structure in industry and the public school.

IED 111. INTRODUCTION TO MATERIALS AND PROCESSES OF INDUSTRY. Class 2, Lab. 2, cr. 3.

A survey of both the established and newer industrial materials and processes with applications to current products. Emphasis is placed on the development, nature, and characteristics of materials as they affect industrial processes and the importance of manufacturing and its relationships to other phases and activities of the modern industrial complex. Field trips are a requirement.

IED 125. BASIC METAL PRACTICES. Class 1, Lab. 4, cr. 3. (Not open to students in industrial arts teaching.)

The application of basic machine tools and common metalworking hand tools to elementary problems in metals processing and fabrication. A survey of properties and applications of common metals alloys.

IED 210. FOUNDATIONS OF INDUSTRIAL ARTS. Class 3, cr. 3.

A study of traditional and contemporary philosophy, theory, and practice in industrial arts, with emphasis upon the role of industrial arts in contemporary American education.

IED 211. INDUSTRIAL ARTS MATERIALS AND PROCESSES. Class 1, Lab. 4, cr. 3.

An orientation to the processing of materials to provide foundational understandings basic to the laboratory courses in the industrial arts teaching major. Emphasis is placed upon the development, processing, and applications of ceramics, plastics, metals, woods, communications, and power. Field trips are required.

IED 217. WOOD TECHNICS. Class 2, Lab. 4, cr. 4. Prerequisite: IED 211.

A basic course involving a study of common hand and portable tools, principles of construction, process planning, finishing procedures, and characteristics and utilization of the common hardwoods and softwoods. Introduction to basic woodworking machines. Field trips are required.

IED 220. CONTEMPORARY AMERICAN INDUSTRY. Class 3, cr. 3.

A study of contemporary American industry with emphasis upon its interpretation in industrial arts. Field trips are required.

IED 225. GRAPHICS OF COMMUNICATION. Class 1, Lab. 4, cr. 3.

A study of the graphic arts principles involved in the selection of typography, process, paper, and format. Introduction to the reproduction processes of relief, lithography, gravure, and screen process printing. Field trips are required.

IED 242. ELECTRICAL FUNDAMENTALS FOR TEACHERS. Class 2, Lab. 4, cr. 4. Prerequisites: IED 211, MA 154.

An introduction to the utilization and control of electrical energy. Content will include the characteristics, functions, and testing of basic circuits and apparatus. The course is organized to present a wide range of contemporary methods for teaching electrical fundamentals. Field trips are required.

IED 245. GENERAL METALS. Class 1, Lab. 6, cr. 4. Prerequisite: IED 211.

The study of common metals and alloys, relating their uses and characteristics to familiar applications of industry. Laboratory experiences will include arc and gas welding, methods of forming and fabricating, finishing techniques, and utilizing hand tools and basic metal working machines. Field trips are required.

IED 260. PRINCIPLES AND OBJECTIVES OF INDUSTRIAL EDUCATION. Class 3, cr. 3. Prerequisite or corequisite: IED 110.

Historical, legislative, and theoretical foundations of industrial education; objectives of the various types of schools and programs.

IED 262. SUPERVISED WORK EXPERIENCE. Cr. 3, may be repeated to a maximum of 9.

Supervised work experience directed toward providing background and orientation rather than depth in a particular specialty. Craft, technical, industrial, and participation in the conduct of industrial training programs are typical examples of acceptable experiences. Consent of department required.

UNDERGRADUATE LEVEL

Upper-Division Courses

IED 310. MANAGEMENT OF INDUSTRIAL ARTS LABORATORIES. Class 3, cr. 3.

Principles and systems of organization and management; selecting, purchasing, arranging, and maintaining tools, equipment, and supplies in industrial arts laboratories and auxiliary rooms.

IED 344. GRAPHIC ARTS FUNDAMENTALS. Class 2, Lab. 4, cr. 4. Prerequisite: IED 211.

A study of the printing processes and related areas. An introduction to graphic design, composition, plate-making, presswork, papers and inks, bindery, and finishing operations. Printing by relief intaglio, planography, and stencil methods. Considerations in purchasing supplies and equipment for the school laboratory. Field trips are required.

IED 362. COOPERATIVE OCCUPATIONAL INTERNSHIP. Cr. 3-6, may be repeated to a maximum of 36.

Organized and supervised experience directed toward occupational competence in a specific skilled or technical occupation or staff position as required for vocational teacher certification, applied technology teaching, or industrial supervisory and personnel positions. Planned and supervised by department staff in cooperation with business, industry, labor, government, and other employing organizations and agencies. Consent of department required.

IED 375. TEACHING METHODS IN OCCUPATIONAL EDUCATION. Class 3, cr. 3.

Development of competencies in the use and appraisal of the basic methods of teaching occupational subjects. Appropriateness, advantages, and limitations of specific methods.

IED 411. INDUSTRIAL DESIGN. Class 1, Lab. 4, cr. 3. Prerequisite: Consent of instructor.

Processes and methods of design with some emphasis on the designer's role in industry. Industrial products ciritically evaluated in terms of function, structure material, aesthetic quality, produceability, serviceability, and appropriateness. Laboratory activities include design experiences in various media, i.e., woods, metals, synthetics, ceramics, intended to develop a systematic approach to design problems. Field trips are required.

IED 424. ADVANCED GRAPHIC ARTS. Class 1, Lab. 4, cr. 3. Prerequisite: IED 344.

A study of photo-offset lithography and related photo-mechanical techniques. Fundamentals of copy preparation, photography, process camera work, stripping, platemaking, and presswork. Field trips are required.

IED 427. ADVANCED WOOD TECHNICS. Class 1, Lab. 4, cr. 3. Prerequisite: IED 217.

A study of the scope and work of wood processing machine tools and their adaptation and utilization in the production of wood products.

Emphasis on product development, product engineering, and product manufacturing including process planning, quality control, jig and fixture design, and problems related to wood as a production material. Safety and maintenance of wood machine tools. Field trips are required.

IED 444. OCCUPATIONAL ANALYSIS FOR CURRICULUM PLANNING. Class 3, cr. 3. Prerequisite: Permission of instructor.

Study and application of the principles and techniques of analyzing a trade or occupation. Special emphasis is given to the identification of teachable content for the development of vocational-technical curricula and courses.

IED 447. FINISHING INDUSTRIAL MATERIALS. Class 1, Lab. 4, cr. 3. Prerequisite: IED 217.

A study of the types, characteristics,

and properties of finishing materials and surface treatments used on various industrial materials such as metals, wood, plastics, ceramics, glass, textiles, and paper. Opportunities to apply and experiment with a variety of materials and surface treatments on specimens. Safety and maintenance of equipment. Field trips are required.

IED 462. APPRAISAL OF OCCUPATIONAL EXPERIENCE AND COMPETENCY. Cr. 0-36 departmental credit.

Industrial, trade, technical or other occupational experience will be evaluated and a maximum or 36 semester hours credit may be granted. Full credit will be considered only for those candidates who have a minimum of three years appropriate occupational experience and who meet the minimum occupational requirement for vocational certification as established by the Indiana State Plan for Vocational Education. Areas of weakness may be strengthened through enrollment in laboratory courses and/or in IED 362 as required by the adviser.

IED 467. SCHOOL SHOP MANAGEMENT. Class 3, cr. 3.

The school shop and drawing room, including equipment and management. Layout, selection, and arrangement of equipment and supplies; methods of organization and management.

IED 481. COMPREHENSIVE GENERAL SHOP. Class 1, Lab. 4, cr. 3. Prerequisite: Consent of instructor.

This course is an integral part of the professional semester for industrial arts teacher education students. It provides laboratory experiences in the study of industrial plastics and industrial ceramics processes, with emphasis on methods of teaching in a comprehensive general shop. Field trips are required.

DUAL LEVEL

Undergraduate-Graduate

IED 510. COURSE CONSTRUCTION IN INDUSTRIAL-TECHNICAL EDUCATION AND TRAINING. Class 3, cr. 3. Prerequisites: ED 285 and IS 375, or permission of instructor.

Course construction in industrial education and training.

Principles of, and practice in, planning, organizing, and developing instructional content, methods, activities, and materials related to instruction in a particular subject in vocational-industrial-technical education and training situations.

IED 560. CURRICULUM DEVELOPMENT IN INDUSTRIAL EDUCATION. SS. Cr. 2 or 3. Prerequisite: senior standing or consent of instructor.

Study of current industrial education curriculum designs, problems, and trends; methods of gathering curriculum information; procedures in revising and evaluating a curriculum.

IED 564. TESTS AND MEASUREMENTS IN INDUSTRIAL EDUCATION. Class 2, Lab. 2, cr. 3.

Concepts involved in testing and measuring, with applications in industry and industrial education.

IED 566. EDUCATIONAL AND INDUSTRIAL COORDINATION. Class 3, cr. 3. Senior standing or consent of instructor required.

Common problems of education and industry, with emphasis on the development and maintenance of close correlation between school programs of industrial vocational education and the manpower needs of industrial organizations.

IED 568. INSTRUCTION MATERIALS FOR TRADES AND INDUSTRIES. Cr. 1-6. Prerequisites: PSY 120, and ED 285, 304, and 460, or permission of instructor. (Not more than three hours may be accepted toward an advanced degree.)

Application of governing principles to establish an effective arrangement of teaching content required for occupational courses in vocational schools and classes.

IED 570. TECHNICAL EDUCATION IN AMERICA. Class 3, cr. 3.

Technical education in the American economic and political system, including its role and purpose, history, administrative and organizational patterns, student characteristics, problems, potentialities.

IED 571. HISTORY AND PHILOSOPHY OF INDUSTRIAL EDUCATION. Class 3, cr. 3.

A study of the leaders, agencies, and movements that have contributed to the development of industrial education with special attention to the economic, social, and philosophical factors that have motivated and influenced this development in America.

IED 572. PART-TIME AND EVENING-SCHOOL PROGRAMS IN INDUSTRIAL EDUCATION. Cr. 1-3. Senior standing or consent of instructor required.

Problems faced by coordinators, supervisors, and administrators in operating part-time and evening schools, with special emphasis on public relations, teacher selection, in-service training, buildings, and equipment.

Historical development; basic principles of training; the areas of industrial training; the principals of practices of training program development and presentation; review of specific training activities and programs.

IED 576. COOPERATIVE EDUCATION PROGRAMS. Class 3, cr. 3. Senior standing or consent of instructor required.

History and development of cooperative education, underlying principles and theories, operating practices and programs, administrative and legal aspects.

IED 581. WORKSHOP FOR INDUSTRIAL EDUCATION TEACHERS. Cr. 0-8.

Advanced study of industrial education subjects. Emphasis on new technical developments, teaching materials, and methods, and laboratory problems, and their application in teaching situations.

IED 588. TECHNICAL PROBLEMS IN INDUSTRIAL EDUCATION. Cr. 1-6. Prerequisite: Consent of instructor.

Supervised individual problem work in a technical subject matter area.

IED 590. INDIVIDUAL RESEARCH PROBLEMS. Cr. 1-6. Consent of department required.

Opportunity for students to study particular problems in any phase of industrial education or to initiate themselves into research techniques under the guidance of a member of the staff. Does not include thesis work.

GRADUATE LEVEL

IED 621. SEMINAR IN INDUSTRIAL ARTS TEACHING. Class 3, cr. 3.

IED 623. CONTEMPORARY INDUSTRIAL ARTS PROGRAMS. Class 3, cr. 3.

IED 637. ORGANIZATION AND ADMINISTRATION OF VOCATIONAL EDUCATION. Cr. 1-4. Must be preceded by 12 hours in education or equivalent professional training.

IED 646. ANALYSIS OF RESEARCH IN INDUSTRIAL EDUCATION. Class 3, cr. 3. Must be preceded by PSY 500.

IED 647. LEGAL BASES OF VOCATIONAL-TECHNICAL EDUCATION. Class 3, cr. 3.

IED 666. SUPERVISION OF INDUSTRIAL EDUCATION. Cr. 3.

IED 668. SEMINAR IN VOCATIONAL TRADE AND INDUSTRIAL EDUCATION. Cr. 2-4.

IED 696. DESIGN OF RESEARCH IN INDUSTRIAL EDUCATION. Class 3, cr. 3. Must be preceded by PSY 600 and IED 646.

IED 698. RESEARCH. M.S. Thesis.

INDUSTRIAL ENGINEERING TECHNOLOGY

W. E. Thomas, in charge of curriculum and Head of Department of Manufacturing Technology

Associate Professors: (Fort Wayne) D. G. Wilson, M.S.; (Indianapolis) M. S. Bowman, M.B.A.; (North Central) J. R. Blackwell, M.B.A.

Assistant Professors: (Calumet) C. D. Rose, M.B.A.; (Fort Wayne) C. B. Snyder, M.S.; (North Central) R. M. Bobillo, M.B.A.

UNDERGRADUATE LEVEL

Lower-Division Courses

IET 104. INDUSTRIAL ORGANIZATION. Class 3, cr 3. Not open to students who have completed IET 105 and/or 106.

A detailed survey of organizational structures, operational, financial, marketing, and accounting activities; duties of management, planning, control, person-

nel, safety, wages, policy, and human factors necessary for effective management.

IET 105. INDUSTRIAL ORGANIZATION AND PRODUCTION—PART I. Class 2, cr. 2. Not open to students who have completed IET 104.

A survey of the growth and fundamental concepts of American industry which includes a study of internal organization, managerial controls, risk and forecasting, financing, research, productive development, production planning, plant facilities, and production and material control. Knowledge of these factors is necessary for the effective management of an enterprise.

IET 106. INDUSTRIAL ORGANIZATION AND PRODUCTION—PART II. Class 2, cr. 2. Not open to students who have completed IET 104.

A survey of the fundamental concepts connected with quality control, plant engineering, methods improvement, industrial relations, personnel, management, training, motivation, wages, marketing, advertising and sales. Knowledge of these factors is necessary for the effective management of an enterprise.

IET 120. SYSTEMS AND PROCEDURES. Class 3, cr. 3.

An introduction to the systems concept. Surveys recognizing and defining the system's problem; the management audit and tools for systems analysis; design and control of forms, work simplification, work measurement and procedures; operations research; punched card systems; management and administration; and organization of the systems function.

IET 198. INDUSTRIAL PRACTICE I. Cr. 1.

Practice in industry and written reports of this practice for co-op students.

IET 204. TECHNIQUES OF MAINTAINING QUALITY. Class 2, Lab. 3, cr. 3. Prerequisites: MA 111 and 112, or 150.

An analysis of the basic principles of quality control. Includes statistical aspects of tolerances, basic concept of probabilities, frequency distribution, X and R charts and uses of mechanical, electronic, air and light devices for checking and measuring to determine quality levels of acceptance.

IET 220. CRITICAL PATH ANALYSIS. Class 1, Lab. 3, cr. 2.

Detailed study of planning and control of a schedule by network techniques, including the time/cost analysis of CPM scheduling for application on construction projects, job shop scheduling and related problems. Includes an introduction to PERT and the use of the computer for network analysis.

IET 224. PRODUCTION PLANNING AND CONTROL. Class 2, Lab. 3, cr. 3.

Preproduction planning of the most economical methods, machines, operations, and materials for the manufacture of a product. The planning, scheduling, routing, and detailed procedure of production control.

IET 244. FUNDAMENTALS OF PRODUCTION COST. Class 1, Lab. 3, cr. 2.

Fundamental mechanics (rules for debit and credit) of accounting, principles of account classification, business forms and procedures, financial and operating statements, and elements of cost accounting—all from the viewpoint of industrial organization.

IET 250. FUNDAMENTALS OF PRODUCTION COST ANALYSIS. Class 2, Lab. 3, cr. 3. Prerequisite or corequisite: IET 104.

Surveys of fundamental mechanics of accounting, principles of account classification, financial and operating statements, and the generation of cost data according to cost accounting principles. Surveys the generation of cost data according to the principles of engineering economy. Examines applications of cost accounting data and engineering economy cost data to specific management decision areas through selected case problems.

IET 262. MOTION STUDY AND WORK METHODS. Class 2, Lab. 3, cr. 3.

The study of the various techniques of motion study including process charts, operation charts, multiple activity charts, micro and memo motion study, therbligs, the movie camera, along with actual practice in their use. Includes study and application of the basic principles used to develop better methods of performing work.

IET 266. WORK MEASUREMENT AND INCENTIVES. Class 2, Lab. 3, cr. 3. Prerequisite: IET 262.

A study of the fundamentals of time study and work measurement with actual practice in their use. Includes stop watch time study, measuring work with movie camera, the establishment of allowances by both stop watch and work sampling studies, the establishment and use of predetermined time values, and the construction and use of work measurement formulae.

IET 268. PLANT LAYOUT. Class 2, Lab. 3, cr. 3. Prerequisites: EG 110, or equivalent.

Arrangement of stock, machine, layout of aisles, and use of space, and material handling for the highest efficiency of production.

IET 272. JOB EVALUATION. Class 2, cr. 2.

A survey of the basic principles and significance of job evaluation. An analysis of current practices and techniques used in job analysis, job descriptions, and job evaluation.

IET 280. WAGE INCENTIVE. Class 2, cr. 2.

An analysis and study of various types of wage incentive plans, their significance, adaptibility, effectiveness, and equitability. A systematic appraisal of the basic objectives and currently used techniques in the administration of wage incentive programs.

IET 296. INDUSTRIAL TECHNOLOGY CASE PROBLEMS. Class 2, cr. 2.

Application of theories developed in the several industrial technology courses to selected general case problems—to provide practice in the integration of principles.

IET 298. INDUSTRIAL PRACTICE II. Cr. 1.

Practice in industry and written reports of this practice for co-op students.

IET 299. INDUSTRIAL ENGINEERING TECHNOLOGY. Class 0-4, Lab. 3-9, cr. 1-9.

Hours and subject matter to be arranged by staff. Course may be repeated for credit up to nine hours.

UNDERGRADUATE LEVEL

Upper-Division Courses

IET 301. COST EVALUATION AND CONTROL. Class 3, cr. 3. Prerequisite: IET 250.

Designing, installing, and improving standard cost systems in industry, including the establishment of basic standards. Develops the mechanics of operating control reports utilizing principles of management by exception. The use of cost systems for estimating, scheduling, facilities planning, and making economic evaluations. The use of electronic data processing for establishing and analyzing production cost standards will be emphasized.

IET 312. MATERIALS HANDLING. Class 3, cr. 3. Prerequisite: IET 104.

A survey of materials handling elements, the unit load, packaging, bulk handling, the economics of materials handling, improving existing handling methods, justification for handling equipment, special handling techniques, and the management of the materials handling divisions in the industrial organization.

IET 323. PRODUCTION PLANNING AND EXPEDITING. Class 2, Lab. 3, cr. 3.

Methods of planning for routing, tooling, equipment, costing and production of manufactured and processed products. Includes a detailed study of expediting procedures.

IET 324. PRODUCTION TECHNIQUES. Class 3, cr. 3. Prerequisite: IET 224.

Continuation of operation planning with emphasis upon the equipment, tools, and techniques used in mass production. Adaptation of proposed plans to conform to existing facilities.

IET 351. PRODUCTION CONTROL TECHNIQUES. Class 3, cr. 3. Prerequisites: IET 224 and 301.

The study of the various established techniques for analyzing and improving production operations. Emphasis is placed on the application of established analysis techniques such as critical-path scheduling, PERT inventory control, inventory management, forecasting, and linear programming. The use of computer programs for solving problems will be emphasized.

IET 354. ATTRIBUTE AND VARIABLE SAMPLING. Class 2, cr. 2. Prerequisite: IET 204.

Survey single, double, sequential, variable, and continuous production sampling plans. It includes the calculation and plotting of OC, AOQ, and AOQL curves and determining the economic sampling number. Also includes the use of Dodge Romig, MIL STD 105 and MIL STD 414 tables.

IET 364. TOTAL QUALITY CONTROL. Class 3, cr. 3. Prerequisite or corequisite: IET 354.

The course is aimed at determining customer needs and wants, interpreting

these into a design during production, follow-up on field performance, and feeding back quality information to further improve the quality system.

IET 398. INDUSTRIAL PRACTICE III. Cr. 1.
Practice in industry and written reports of this practice for co-op students.

IET 404. INDUSTRIAL ORGANIZATION. Class 3, cr. 3. (Not open to students who have had IET 104).
A study of industrial organization structures and an introduction to managerial responsibilities including the activities of industrial administration, financing, managerial controls, product development, manufacturing engineering, material control, quality control, and manpower management areas of operations.

IET 450. PRODUCTION COST ANALYSIS. Class 3, cr. 3. (Not open to students who have had IET 250).
An introduction to financial statements and to the study of the costs of production in terms of break-even and least cost alternatives including present and future costs when related to the time value of money, budgeting, labor and overhead, production cost control and the role of the supervisor and the industrial engineering technologist to cost control.

IET 460. MOTION AND TIME STUDY. Class 2, Lab. 3, cr. 3. Prerequisite: Junior standing.
Techniques of motion and time study, process charts, operation charts, multiple activity charts, micromotion study, therbligs, and stop-watch time study.

IET 497. SENIOR PROJECT. Cr. 3.
Hours to be arranged. Directed work on individual projects for senior industrial engineering technology students.

IET 498. INDUSTRIAL PRACTICE IV. Cr. 1.
Practice in industry and written reports of this practice for co-op students.

INDUSTRIAL SUPERVISION

T. F. Hull, Head of the Department

Professors: (Indianapolis) H. L. Wisner, M.S.; (Lafayette) L. F. Greenberger, Ph.D.; T. F. Hull, Ed.D.

Associate Professors: (Calumet) J. T. Malone, M.A., (Fort Wayne) C. H. Creasser, LL.B.; (Lafayette) G. D. Barnes, M.B.A.; J. L. Windle, Ph.D.

Assistant Professors: (Calumet) B. A. Hindmarch, M.B.A.; D. E. Norris, B.S. Ed. (Fort Wayne) G. W. Abbot, M.A.; (Indianapolis) D. W. Ebling, M.B.A.; O. A. Paul, M.B.A.; (Lafayette) R. D. Cupka, M.S.; C. D. Fuller, M.S.; J. W. Holcroft, M.S.; T. L. Landrum, M.S.; M. H. Steel, M.A.; J. W. Walker, M.S.Ed.; (North Central) R. J. Buckley, M.B.A.

Instructors: (Indianapolis) R. J. Messemer, B.A.; G. A. Weed, B.S.

UNDERGRADUATE LEVEL

Lower-Division Courses

IS 100. INDUSTRIAL SUPERVISION LECTURES. Class 1, cr. 1.
Introduction to the Department of Industrial Supervision and to the curricula available in it, and an overview of the supervision and personnel functions in business, industry, and government.

IS 240. LABOR RELATIONS PROBLEMS. Class 3. cr. 3.
Problems of workers with possible solutions as suggested by organized labor and management. Regulations concerning management, labor, the collective bargaining agreement, grievance and arbitration procedures.

IS 252. HUMAN RELATIONS IN INDUSTRY. Class 3, cr. 3.
Study of the bases of human relations and the organization of individual and group behavior. Special emphasis on typical industrial and business relationships in every day situations. Examines fundamental relationships between behavior and personal and group forces.

IS 262. SUPERVISED WORK EXPERIENCE. Cr. 3. May be repeated to a maximum of nine.
Supervised work experience directed toward providing orientation, background, and insight into industrial operations. Technical and industrial jobs or participation in industrial training programs are typical examples of acceptable experiences. Consent of department required.

IS 268. ELEMENTS OF LAW. Class 3, cr. 3.
An introductory law course with a brief comparison of the American federal system and the parliamentary system of government, and covering law with emphasis on judicial review, and court jurisdiction and procedure generally and basic law in particular.

Upper-Division Courses

IS 331. INDUSTRIAL SAFETY. Class 2, cr. 2. Consent of instructor required.
A study of the industrial accident problem and its control. Accident analysis through the modern accident prevention philosophy of causation control. Accident prevention training; organization for accident prevention; workmen's compensation laws.

IS 356. PERSONNEL PROBLEMS IN INDUSTRY. Class 3, cr. 3.
Analysis of selected case problems, with emphasis on attitudes, philosophies, and responsibilities of supervisory personnel in relationship to the worker.

IS 362. COOPERATIVE OCCUPATIONAL INTERNSHIP. Cr. 3-6. May be repeated to a maximum of 24.
Organized and supervised work experience directed toward preparation for supervisory, personnel, and related positions in industry. Planned and supervised by departmental staff in cooperation with business, industrial, labor, government, and other employing organizations and agencies. Consent of department required.

IS 368. LEGISLATION AFFECTING INDUSTRIAL RELATIONS. Class 3, cr. 3.
Wage contracts and payments, workmen's compensation and insurance, injunction, strikes and boycotts, and statutes affecting labor.

IS 374. INDUSTRIAL SUPERVISION. Class 3, cr. 3.
Introduction to and overview of the function of supervision in business, industry, and government. Emphasis on the importance, practices, and characteristics of the supervisor.

IS 375. BASIC METHODS OF INDUSTRIAL TRAINING. Class 3, cr. 3.
Principles, practices, and variations of basic methods of instruction as related to training situations in business and industry.

IS 474. CONFERENCE LEADERSHIP TRAINING. Class 2, Lab. 2, cr. 3.
Understanding of the role of the conference in business and industry together with practical applications of the various techniques of conference leadership and an understanding of group dynamics in the conference situation.

DUAL LEVEL

Undergraduate-Graduate

IS 574. MANAGERIAL TRAINING AND DEVELOPMENT. Class 3, cr. 3. Prerequisite: IS 374 or consent of instructor.
Review of current managerial education and development theories and practices; discussion of fundamental social, economic, and political changes affecting business and the work of managing; implications of these changes for individual manager development and continued growth.

IS 577. ORGANIZATION AND ADMINISTRATION OF INDUSTRIAL TRAINING. Class 3, cr. 3 Prerequisite: IS 574.
Organization of the training function; the relationship of the training department to other departments of the plant; the evaluation of training; administrative practices; the selection and education of training personnel; professional and nonprofessional activities of training personnel.

IS 590. INDIVIDUAL RESEARCH PROBLEMS. Cr. 1-6. Consent of department required.
Opportunity for students to study specific problems in any phase of industrial supervision or to initiate themselves into research techniques and methods under the guidance of a qualified faculty member within the department. Does not include thesis work.

GRADUATE LEVEL

IS 667. SUPERVISED FIELD PRACTICE IN INDUSTRIAL TRAINING. Cr. 3.

MECHANICAL ENGINEERING TECHNOLOGY

W. E. Thomas, in charge of curriculum and Head of Department of Manufacturing Technology

Professors: (Calumet) C. E. Columbus, M.S.; (Lafayette) W. E. Thomas, M.S.

Associate Professors: (Calumet) E. C. Gallett, M.S.; (Fort Wayne) H. F. Gerdom, M.S.; D. J. McAleece, M.A.; C. J. Quinn, M.A.; W. W. Worthley, M.S.; (Indianapolis) R. E. Peale, M.S.; H. W. Stoelk; (Lafayette) W. F. Harrison, M.S.; V. L. Hastings, M.S.; W. F. Melhorn, M.S.; R. L. Miller, M.S.; H. A. Montgomery, M.S.; D. A. Pease, B.S.; S. L. Pritchett, M.S.; (North Central) F. R. Lisarelli, M.A.

Assistant Professors: (Calumet) J. E. Anderson, M.S.; G. E. DeGraff, M.S.; R. F. McCormick, M.S.; P. Perkins, B.S.; (Fort Wayne) L. R. Allendorph, M.S.; E. E. Messal, Ph.D.; C. D. Powell, M. Eng.; J. F. Rosencrans, B.S.; D. J. Schmidt, M.S.; J. E. Tryon, B.S.; (Indianapolis) Sam Close, B.M.E.; R. M. Frank, M.S.; M. W. Milgate, M.S.; R. E. Moll, M.S.; R. R. Strebe, M.S.; R. E. Tharp, M.S.; J. M. Ulrich, M.S.; (Jeffersonville) H. D. Brettschneider, M.S.; G. T. Popp, M.S.; (Lafayette) W. L. Baldwin, M.S.; G. F. Hartje, M.S.; B. E. Nuckols, M.S.; J. D. Pounds, M.S.; H. R. Roach, M.S.; (Richmond) W. M. Barker, M.A.; L. J. Ike, M.S.

Instructor: (Calumet) J. M. Peterson, M.S.

UNDERGRADUATE LEVEL

Lower-Division Courses

MET 100. APPLIED ENGINEERING COMPUTATIONS. Lab. 3, cr. 1.

Practical application of the proper use of the slide rule, desk calculator, and an introduction to the electronic computer and dimensional analysis. How to draw graphs and introduction to means of their reproduction.

MET 112. APPLIED MECHANISMS. Class 3, cr. 3.

An analysis of motions, displacements, velocities, friction wheels, instant centers, flexible connectors, cams, linkages and gears.

MET 140. CASTING PROCESSES. Class 1, Lab. 6, cr. 3.

A survey of basic casting processes with emphasis placed on understanding the component parts of a foundry operation. Areas covered are patterns, cores, cleaning, melting, molding, and pouring. Laboratory exercises will augment the lecture discussions.

MET 145. FOUNDRY SANDS. Class 1, Lab. 3, cr. 2.

An introduction to the testing procedures used in the study and control of foundry sands; also the analysis of casting defects attributed to sand.

MET 156. GRAPHICAL COMPUTATIONS. Lab. 6, cr. 3. Prerequisite: EG 110; prerequisite or corequisite: MA 112.

Descriptive geometry principles applied to the solution of engineering problems; intersections and development of surfaces; layout of objects in space; and determination of clearances between objects in space.

MET 180. MATERIALS AND PROCESSES. Class 2, cr. 2.

Application and characteristics, both physical and chemical, of the materials most commonly used in industry; the primary processes involved in producing these materials for industry.

MET 198. INDUSTRIAL PRACTICE I. Cr. 1.

Practice in industry and written reports of this practice for co-op students.

MET 200. POWER SYSTEMS. Class 3, cr. 3. Prerequisite: MA 221.

A survey of steam and nuclear power plants, internal combustion engines, gas turbines, pumps, compressors, fans and blowers, refrigeration. Some theory in thermodynamics, combustion of fuels, heat transfer. Power generation and application to various fields with special mention of transportation.

MET 201. AGRICULTURAL CONSTRUCTION AND MAINTENANCE. Class 1, Lab. 4, cr. 3.

Fundamental principles in selection of tools for the construction and maintenance of agricultural equipment and machines, basic structural components including concrete, wood, and metal. Required for students seeking certification as teachers of agricultural education.

MET 204. PRODUCTION DRAWING. Lab. 6, cr. 2. Prerequisite: EG 110; prerequisite or corequisite: MET 180.

To prepare the student to accept employment as a layout and detail draftsman, including some junior design responsibility.

MET 210. APPLIED STATICS. Class 2, cr. 2. Prerequisite or corequisite: MA 150.

Force systems, resultants and equilibrium, centroids of areas and centers of gravity of bodies, trusses, frames, beams, friction and moments of inertia of areas and bodies.

MET 211. APPLIED STRENGTH OF MATERIALS. Class 4, cr. 4, or Class 3, Lab. 2, cr. 4. Prerequisite: MET 210; prerequisite or corequisite: MA 221.

Principles of applied strength of materials primarily with reference to mechanical design.

MET 212. MECHANICS OF MATERIALS. Class 4, cr. 4 or Class 3, Lab. 2, cr. 4. Prerequisite or corequisite: MA 112 and GNT 136.

Forces acting on rigid bodies at rest and in motion-embracing vectors, force and moment laws of equilibrium for various force systems, centroids, center of gravity and moments of inertia, stress and strain, riveted and welded joints, torsion, shear, bending and deflection of beams, combined stresses and columns.

MET 215. WELDING. Class 1, Lab. 4, cr. 2.

The study of welding equipment and processes. Laboratory practice in typical welding problems using both arc and gas methods.

MET 216. MACHINE ELEMENTS. Class 4, cr. 4, or Class 3, Lab. 2, cr. 4. Prerequisites: MET 204, 211 and MA 221.

A survey of the more important elements used in tools and machines, and their general characteristics pertaining to application, operational behavior, efficiency, economy, and standardization.

MET 225. MACHINE TOOL LABORATORY. Class 1, Lab. 4, cr. 3. Prerequisite: IED 245 or consent of instructor.

Comprehensive introduction to machine tools such as the lathe, shaper, drill press, milling machine, and grinder with emphasis on the development of initial skills in performing basic operations. A survey of production machining processes, introduction to some of the newer machine tools such as EDM, ECM, N/C and some instruction in inspection and quality control are included.

MET 228. MACHINE DESIGN I. Lab. 6, cr. 2. Prerequisite or corequisite: MET 216.

Practical applications in the design of machines and products utilizing mechanical, pneumatic, hydraulic and electrical operation and control.

MET 232. DYNAMICS. Class 3, cr. 3 or Class 2, Lab. 2, cr. 3. Prerequisites: MET 211 and MA 222.

Basic fundamentals of dynamics; displacement, velocities, accelerations, work energy, power, impulse, momentum, and impact.

MET 236. JIG AND FIXTURE DESIGN. Lab. 6, cr. 2. Prerequisite: MET 204.

Application of principles in the design and construction of drilling, milling, reaming and assembly jigs and fixtures; information related to materials, heat treatment and cost estimating. Gaging characteristics, selection, and design for interchangeable manufacturer.

MET 240. MELTING UNITS, OPERATION AND DESIGN. Class 1, Lab. 3, cr. 2.

A study in the design and use of typical melting units used in connection with cast metals.

MET 241. WELD PROCESSES AND DESIGN. Class 1, Lab. 6, cr. 3.

A survey of welding processes and their application to casting repair and fabrication of cast parts.

MET 249. FOUNDRY PROBLEMS. Class 1, Lab. 6, cr. 3.

A study of typical foundry problems dealing with the areas of sands, melting, cleaning, cores, pouring, molding, and solution of casting defects.

MET 256. MATERIAL FABRICATION. Class 2, cr. 2. Prerequisite or corequisite: MET 180.

A study of the physical characteristics of metals and non-metals with respect to their behavior during fabrication; methods of material removal; elementary as-

pects of machine tool operation and tooling requirements.

MET 288. DIE DESIGN. Lab. 6, cr. 2. Prerequisite: MET 204.

Application of principles in the design and construction of piercing, blanking, forming, drawing dies; single combination compound and progressive type dies. Cam and assembly dies. Related information as to materials, heat treatment, and cost estimating.

MET 296. MACHINE TOOL LABORATORY. Lab. 3, cr. 1. Prerequisite or corequisite: MET 180.

Two weeks' course consisting of 48 laboratory hours of instruction offered at the Lafayette campus on a full-time basis or on the eight Saturdays during the regular summer session.

To acquaint students with the uses and limitations of general purpose and production machines as well as with integrating processes of foundry welding, heat treating, and inspection into production planning.

MET 298. INDUSTRIAL PRACTICE II. Cr. 1.

Practice in industry and written reports of this practice for co-op students.

MET 299. MECHANICAL ENGINEERING TECHNOLOGY. Class 0-4, Lab. 3-9, cr. 1-9.

Hours and subject matter to be arranged by staff. Primarily for third or fourth semester students with special aptitudes.

UNDERGRADUATE LEVEL

Upper-Division Courses

MET 300. APPLIED THERMODYNAMICS. Class 3, cr. 3. Prerequisite: MA 222 and MET 200.

The fundamentals of thermodynamics including application of the first and second laws, enthalpy, entropy, reversible and irreversible processes.

MET 315. CASTING, FORGING, AND HEAT TREATING. Class 1, Lab. 4, cr. 2. Prerequisite: IED 115.

Basic practices involved in the making of castings, such as molding, melting, pouring, and cleaning. Shaping of steel by hot forging using both hand and machine methods. Heat treatment of steel, involving annealing, tempering, casehardening, normalizing, and hardening.

MET 326. INTRODUCTION TO POWER. Class 3, Lab. 2, cr. 4.

An introduction to the development, transmission, and utilization of power.

MET 330. INTRODUCTION TO FLUID POWER. Class 3, cr. 3 or Class 2, Lab. 2, cr. 3.

A study of the development, transmission, and utilization of power through fluid power circuits and controls.

MET 332. FLUID POWER CIRCUITS. Class 2, Lab. 2, cr. 3. Prerequisite: MET 330.

Principles and practices for selecting and applying fluid power devices and related equipment to machine circuits for both linear and rotary motion. The nature of the work to be accomplished and the various fields of application will be analyzed.

MET 335. BASIC MACHINING. Class 1, Lab. 3, cr. 2. Prerequisites MET 180, EG 110, or equivalents.

A comprehensive survey of machine tools as they are used in converting work-pieces into finished products with consideration of cost, quality, quantity, and interchangeability. Actual operation analysis of many machine tool setups will be provided for comparison studies.

MET 340. PIPING AND PLUMBING DESIGN. Class 3, cr. 3. Prerequisite: MET 330.

Design of plumbing systems, include losses in pipes, fittings, nozzles, orifices, etc. Includes steam water and oil systems. Piping handbooks and catalogs are utilized in conjunction with the State of Indiana Piping Code.

MET 350. APPLIED FLUID MECHANICS. Class 3, cr. 3. Prerequisite: MET 300.

The fundamentals of fluid mechanics, including: properties of fluid, pressure; hydrostatic force on submerged areas; kinematics and dynamics of fluid flow; friction losses and sizing of pipes.

MET 355. PRODUCTION MACHINING. Class 2, Lab. 3, cr. 3. Prerequisite: MET 335.

An intensive study of production processes, tools, setups, workpiece materials machinability, newer methods of machining, and the economics of efficient materials machining.

MET 360. HEATING, VENTILATING, AND AIR CONDITIONING. Class 3, cr. 3 or Class 2, Lab. 2, cr. 3. Prerequisites: MET 200.

A study of heat losses, heat producing equipment, and cooling equipment in addition to the design of the direct systems. Includes controls and cost estimating for commercial, industrial and residential systems. Codes and standards are emphasized throughout the course.

MET 361. REFRIGERATION. Class 3, cr. 3 or Class 2, Lab. 2, cr. 3. Prerequisite: MET 200.

Design and maintenance of refrigeration systems for large and small applications. This course is intended to complement MET 360 for large air conditioning systems.

MET 370. INTRODUCTION TO NUMERICAL CONTROL. Class 2, cr. 2. Prerequisite: MET 335.

An introduction to the numerical control process. The course includes history, economic evaluation, additional benefits, and a discussion of system components. Primarily directed toward the manufacturing process, the course covers various types of N/C equipment.

MET 371. PROGRAMMING FOR NUMERICAL CONTROL. Class 1, Lab. 2, cr. 2. Prerequisite: Algebra, trigonometry, MET 256, 335, or permission of instructor.

An introduction to manual and computer aided programming. The course covers manual point to point programming for both incremental and absolute systems and computer aided programming with the emphasis on the APT language.

MET 380. MATERIALS AND PROCESSES. Class 2, cr. 2. Open only to non-MET students.

Application and characteristics, both physical and chemical, of the materials most commonly used in industry; the primary processes involved in producing these materials for industry.

MET 384. INSTRUMENTATION. Class 2, Lab. 3, cr. 3.

Basic principles of instruments selected. Care and use as found in industry for physical measurement.

MET 385. FLUID POWER SYSTEMS ANALYSIS. Class 2, Lab. 2, cr. 3. Prerequisite: MET 350 and 330.

Procedures and techniques essential for checking integrated systems; using electrical, mechanical, and fluid power equipment. Functional aspects, safety, efficiency, and the economics of systems combining features for power and control will be analyzed including automatic, semi-automatic and manually operated machines.

MET 398. INDUSTRIAL PRACTICE III. Cr. 1.

Practice in industry and written reports of this practice for co-op students.

MET 400. POWER SYSTEMS. Class 3, cr. 3. Prerequisite: GNT 136. Open only to non-MET students.

A survey of steam and nuclear power plants, internal combustion engines, gas turbines, pumps, compressors, fans and blowers, and refrigeration. Some theory in thermodynamics, combustion of fuels, and heat transfer. Power generation and application to various fields with special mention of transportation.

MET 412. MECHANICS OF MATERIALS. Class 4, cr. 4. Prerequisite: GNT 136; prerequisite or corequisite: MA 112. Open only to non-MET students.

Forces acting on rigid bodies at rest and in motion-embracing vectors, force and moment laws of equilibrium for various force systems, centroids, center of gravity and moments of inertia, stress and strain, riveted and welded joints, torsion, shear, bending and deflection of beams, combined stresses and columns.

MET 426. INTERNAL COMBUSTION ENGINES. Class 2, Lab. 2, cr. 3.

A study of the spark ignition, compression ignition and continuous burning internal combustion engines.

MET 497. SENIOR PROJECT. Class 2, Lab. 2, cr. 3.

Directed work on individual projects for senior mechanical engineering technology students.

MET 498. INDUSTRIAL PRACTICE IV. Cr. 1.

Practice in industry and written reports of this practice for co-op students.

MET 499. MECHANICAL ENGINEERING TECHNOLOGY. Class 0-4, Lab. 3-9, cr. 1-9.

Hours and subject matter to be arranged by staff. Course may be repeated for credit up to nine hours.

MENTAL HEALTH TECHNOLOGY

Denver Sams, in charge of curriculum and Acting Head of Department of General Studies

Assistant Professor: (Fort Wayne) R. W. Hawley, M.S.W.

UNDERGRADUATE LEVEL
Lower-Division Courses

MHT 100. INTRODUCTION TO MENTAL HEALTH. Class 3, Lab. 6, cr. 4.
An orientation to the field of mental health work. History, definitions, current concepts, and roles of the various workers in the field are introduced and discussed. Supervised patient work is introduced.

MHT 101. THE CASE STUDY METHOD. Class 2, Lab. 6, cr. 4.
A variety of emotionally disturbed and mentally retarded cases are studied. Supervised practicum experiences with patients are carried out in several mental health settings.

MHT 105. PRACTICUM WORK WITH EMOTIONALLY DISTURBED. Cr. 1.
Supervised work experience in one of the mental health settings. Student is assigned to a professional in a setting and works directly with patients. Emphasis is placed on the understanding and treatment of the emotionally disturbed.

MHT 110. GROUP DYNAMICS I. Class 2, cr. 2.
An introduction to the dynamics of group functioning through first-hand experience. The small group studies itself, focusing on process variables, effective patterns of communication, and personal growth.

MHT 111. GROUP DYNAMICS II. Class 2, cr. 2.
A continuation of MHT 110. Special attention is given to the translation of principles to the mental health team.

MHT 200. ACTIVITY THERAPIES. Class 1, Lab. 6, cr. 4.
A survey of the treatment roles played by the various ancillary therapies. Some of the techniques are explained and students participate in using them with patients.

MHT 201. LEARNING THEORY AND BEHAVIORAL MODIFICATION. Class 3, Lab. 6, cr. 5.
Current learning theory and empirical findings are surveyed. Principles of shaping the behavior of animals and humans are explored and applied to patients.

MHT 210. GROUP DYNAMICS III. Class 2, cr. 2.
A continuation in more depth of group dynamics experience. The understanding of work groups, patient ward groups, and other related groups is stressed.

MHT 211. GROUP DYNAMICS IV. Class 2, cr. 2.
Further depth work in group dynanmics which includes the introduction of role-playing, psychodrama, and other therapeutic techniques.

MHT 298. SEMINAR IN MENTAL HEALTH. Class 3, cr. 3.
A discussion of certain problems in mental health. Ethical considerations of such work are explored. The organization and management of mental health settings is introduced.

METALLURGICAL ENGINEERING TECHNOLOGY

W. E. Thomas, in charge of curriculum and Head of Department of Manufacturing Technology

Associate Professor: (Calumet) A. L. Kaye, Sc.D.

UNDERGRADUATE LEVEL
Lower-Division Courses

MTT 184. FERROUS METALLURGY. Class 3, cr. 3.
Fundamentals of production metallurgy with specific consideration of the methods employed in the reduction and refining of iron and steel.

MTT 228. PHYSICAL METALLURGY I. Class 3, Lab 3, cr. 4. Prerequisites: MTT 184 or GNT 176.
Basic principles: solid solutions, intermetallic compounds, equilibrium diagrams, plastic deformation, recrystallization and grain growth, heat treatment, and phase changes in the solid state.

MTT 229. PHYSICAL METALLURGY II. Class 3, Lab. 3, cr. 4. Prerequisite: MTT 228.
A continuation of MTT 228.

MTT 240. HEAT TRANSFER AND THERMODYNAMICS. Class 2, Lab. 3, cr. 3. Prerequisite or corequisite: MA 222.
Fundamentals of heat transfer as applied to furnaces, heat exchanges, steam generators, and distilling equipment. Also includes fundamental laws of thermodynamics as applied to metallurgy.

MTT 280. NONFERROUS METALLURGY. Class 2, cr. 2.
Fundamentals of production metallurgy, with specific consideration of the methods employed in the reduction and refining of selected nonferrous metals.

MTT 284. METALLOGRAPHY. Class 1, Lab. 6, cr. 3. Prerequisite: MTT 228.
Preparation and microscopic examinations of metals.

MTT 290. MECHANICAL METALLURGY. Class 3, cr. 3. Prerequisite: MTT 228.
Metallurgical aspects of metal processing including welding, forging, stamping, etc., are presented. The newer industrial techniques are investigated in metal processing, powder metallurgy, vacuum and zone refining, etc.

UNDERGRADUATE LEVEL
Upper-Division Courses

MTT 396. CHEMICAL AND METALLURGICAL TECHNOLOGY. Class 2-4 and/or Lab. 3-9, cr. 1-7. Fee will be charged at the rate of $15 per class hour and $4 per laboratory hour. Hours as arranged with staff.
Primarily for students who have completed the requirements for the diploma in applied technology. Special studies in chemical and metallurgical technology.

MTT 491. APPLIED METALLURGY. Class 3, cr. 3.
A study of ferrous and nonferrous metals and alloys. Includes atomic structure, bonding, and arrangements of atoms; phase diagrams; reactions within solid materials; and the interrelation of these to show how structure determines the properties of a material.

NURSING

Helen R. Johnson, Head of the Department

Professors: (Lafayette) Angela J. Del Vecchio, M.Ed.; Helen R. Johnson, M.S.

Associate Professors: (Calumet) Joyce Ellis, M.S.; Gwendolyn W. Engle, M.S.; Esther Ramsay, M.S.; Gloria J. Smokvina, M.S.; M. Gwendolyn Webber, M.S.; (Fort Wayne) Marjorie E. Crill, M.S.; Doris O. Mack, M.A.; Jane K. Niles, M.S.; (Lafayette) G. Ann Larowe, M.S.; Mary Jo Mirlenbrink, M.S.; Eoto R. Stokes, M.S.

Assistant Professors: (Calumet) Louise G. Buechley, M.N.; Dorothy J. Slamkowski, M.S.; Judith K. Stryczek, M.S.; (Fort Wayne) Elaine N. Cowen, M.S.; Phyllis E. Eckman, M.S.; Judith A. Eichenauer, M.S.; Betty L. Funck, M.S.; (Lafayette) Mary E. Blatchley, M.S.; Dixie G. Emler, M.S.; Mary C. Farley, M.S.; Loretta C. Myers, M.S.; Laurie Orlich, M.S.; Karen Royer, M.N.; (North Central) R. E. Fullen, M.S.N.

Instructors: (Calumet) Beverly R. Bailey, B.S.; Joan M. Doyle, B.S.; Carol J. Magliola; Margaret E. Prugh, A.B., G.N.; Dorothy Smith, B.S.; Joyce H. Godels, B.S.; Jean A. Streeter, B.S.; Edna J. York, B.S.N.; (Lafayette) Celeste A. Dye, M.A., M.S.; Ardeth J. Hall, B.S.N.; Elizabeth L. Martin, B.S.; Marylou O'Brien B.S.; Rosemary A. Ray, B.S.; Dianne A. Ruch, B.S.; Judith Russell, B.S.N.; Louella F. Shade, B.S.; Christine M. Sorenson, B.S.; Dorothy S. Stewart, B.S.; (North Central) Barbara L. Koch, B.S.; Judith N. McKeever, B.S.; Mary C. Presol, B.S.; Paula Wringer, B.S.; Carol A. Rocke, M.S

PERSONAL SERVICE COURSES*

Students successfully completing personal service courses numbered 1 through earn certificate units and not University credit.

8. VOCATIONAL ETHICS AND PERSONAL HYGIENE. Class 6, cert. units 6, $38. Designed to give the practical nursing udent an understanding of ethical and terpersonal relationships with the paent, family, physician, professional urse, and other coworkers. Includes delopment of an understanding of the atient's needs by making the student urse aware of her own physiological, sychological, and community needs.

T 16. FAMILY LIVING. Class 5, Lab. 4, cert. units 7, $74.
Deals with the basic principles for successful family life with special emphasis n the role of the practical nurse when aring for a patient in his home. Stresses ood preparation, meal planning and uying, serving of regular and special iets, budgeting, and organization of ome duties in order to provide a clean nd wholesome environment for the ick.
Includes normal child development and roblems of the aged, with emphasis on he health needs of these two age groups nd the necessity for planned activities to give them security and enrich their ives.

NT 24. NURSING CARE. Class 5, Lab. 11, cert. units 10, $63.
Develop skills necessary to give nursing care to the subacute, convalescent, and chronically ill patient, together with an understanding of the basic principles involved. Demonstration and practice of nursing skills form a major portion of this course.
Knowledge of normal pregnancy and common illness is included, together with nursing measures required in these specific conditions.

NT 44. MEDICAL CLINICAL EXPERIENCE. Eight weeks. Class 4, Lab. 36, cert. units 11, $10.
Practical application of acquired nursing skills in the care of the medical patient in the hospital. Classroom instruction includes specialized medical techniques which have not been covered in the preclinical period.
This course is given at Methodist Hospital—Gary, Indiana.

NT 56. SURGICAL CLINICAL EXPERIENCE. Eight weeks. Class 4, Lab. 36, cert. units 11, $10.
Practical application of acquired nursing skill in the care of the surgical patient in the hospital. Classroom instruction includes specialized surgical techniques which have not been covered in the preclinical period.
This course is given at St. Catherine's Hospital—East Chicago, Indiana.

NT 64. MATERNITY CLINICAL EXPERIENCE. Eight weeks. Class 4, Lab. 36, cert. units 11, $10.
Practical application of acquired nursing skills in the care of mothers and newborn infants in the hospital. Includes two weeks' experience in the labor and delivery room. Classroom instruction includes specialized maternity and nursery techniques which were not covered in the preclinical period.
This course is given at St. Margaret's Hospital—Hammond, Indiana.

NT 72. PEDIATRICS AND LONG-TERM ILLNESS CLINICAL EXPERIENCE. Eight weeks. Class 4, Lab. 36, cert. units 11, $10.
Practical application of acquired nursing skills in the care of children and patients whose conditions require long-term hospitalization. Classroom instruction includes specialized nursing techniques applicable to these patients which were not covered in the preclinical period.
This course is given at St. Mary's Mercy Hospital—Gary, Indiana.

UNDERGRADUATE LEVEL†

Lower-Division Courses

NT 100. GUIDED READINGS IN NURSING. Class 1, cr. 1.
For nursing students and/or others with an interest related to nursing practice. Current literature and events related to nursing.

NT 115. NURSING I (Introduction to Nursing). Class 4, Lab. 6, cr. 6.
Explores the concepts of health, illness, man's pursuit of wholeness, and nursing intervention through the use of the nursing process. Basic human needs, interpersonal relationships, and dynamics of behavior are studied. Laboratory experience is provided in the college, hospitals, and other community agencies.

NT 116. NURSING II (Medical-Surgical Nursing of Adults and Children). Class 4, Lab. 6, cr. 6.
Applies the nursing process to the care of adults and children who experience problems related to selected basic human needs. Surgical intervention as a stress situation is studied. Laboratory experiences are provided in hospitals and other agencies.

NT 224. NURSING III (Medical-Surgical Nursing of Adults and Children). Class 5, Lab. 15, cr. 10.
Utilizes the nursing process in caring for adults and children who experience complex problems related to selected basic human needs. Laboratory experiences are provided in hospitals and other community agencies.

NT 225. MATERNAL CHILD HEALTH NURSING. Class 3, Lab. 6, cr. 5.
Applies the nursing process in caring for the emerging family group throughout the maternal cycle and childhood. Includes the study of normal growth and development and the care of children with diseases unique to childhood. Laboratory experiences are provided in hospitals and other community agencies.

NT 240. PSYCHIATRIC MENTAL HEALTH NURSING. Class 3, Lab. 6, cr. 5.
Integrates the pursuit of wholeness with a study of personality structure and common psychiatric disorders. Applies principles of individual and group behavior to the emotionally ill. Laboratory experiences are provided in hospitals and other community agencies.

NT 280. ISSUES IN NURSING. Class 3, cr. 3.
Provides opportunity to acquire understandings essential for making an effective transition to the role of a registered nurse. Emphasis is placed upon contemporary problems and trends in health care.

* The cost for transportation to and from hospitals and field trips will be paid by the individual student directly to the carrier.

† All NT courses above NT 100 must be taken in sequence.

UNDERGRADUATE LEVEL

Upper-Division Courses

NT 310. FAMILY AND COMMUNITY NURSING I. Class 3, Lab. 6, cr. 5 (lab. hours arranged). Prerequisite: registered nurses only. Corequisites: COM 114, PSY/SOC 340 or SOC 350 or 553.
Content and clinical experience with patients whose illness will significantly alter their life style and that of their families. Use of appropriate community resources and agencies. Additional focus on devising and carrying out personalized health care plans using innovative nursing techniques.

NT 320. FAMILY AND COMMUNITY NURSING II. Class 3, Lab. 6, cr. 5 (lab hours arranged). Prerequisite: NT 310. Corequisites: COM 320 or 315, PSY 311.
Continuation of NT 310 with increased emphasis on community resources and agencies, preventive health care, and promotion of community health.

NT 410. NURSING LEADERSHIP. Class 3, Lab. 6, cr. 5 (lab. hours arranged). Prerequisite: NT 320. Corequisite: IS 240.
Content and clinical experiences in assisting staff in planning care for patients with various degrees of illness. Implementation of plans of care for large numbers of patients, using team and other assignment methods. Delegation of authority and responsibility, teaching other health personnel, and evaluating nursing care given.

NT 420. NURSING MANAGEMENT. Class 3, Lab. 6, cr. 5 (lab. hours arranged). Prerequisite: NT 410. Corequisites: IS 356 or 374, SOC 380, CPT 100.
Content and clinical experiences ranging in scope from managing the care of a patient requiring complex life supporting machinery to managing an entire patient care facility. Includes collaborating with others (through managerial skills) concerned with the responsibilities of managing the care of patients.

LLUTION CONTROL TECHNOLOGY

D. Moss, in charge of curriculum and Head of Department of Construction Technology

UNDERGRADUATE LEVEL

Lower-Division Courses

110. INTRODUCTION TO POLLUTION CONTROL. Class 1, Lab. 3, cr. 2.
an introduction to the pollution con- l areas of water supply, wastewater atment, solid waste disposal, air pol- ion control, and other areas of en- onmental sanitation. Development of broad understanding of pollution con- ol problems related to communicable ease. Field trips are required.

T 210. SANITARY CHEMISTRY AND BIOLOGY. Class 2, Lab. 6, cr. 4. Prequisite: CHM 110. Prerequisite or coquisite: BIOL 220.
A study of principles and procedures pplicable to water and wastewater treatent, air pollution control, and solid aste disposal. An understanding of the eory as well as adequate laboratory chniques are developed.

CT 220. WATER SUPPLY OPERATIONS. Class 3, Lab. 3, cr. 4. Prerequisite or orequisite: PCT 210 and CET 253.
Fundamental aspects of water supply operations. Topics include: water sources, treatment procedures, and distribution systems. Field trips are required.

PCT 221. AIR POLLUTION CONTROL. Class 2, Lab. 3, cr. 3. Prerequisite: PCT 210.
Fundamental aspects of air pollution control, including sources and types of pollution, sampling procedures and analysis, and control methods. Field trips are required.

PCT 222. SOLID WASTE DISPOSAL. Class 1, Lab. 3, cr. 2. Prerequisite: PCT 210.
Composition and character of refuse, refuse collection, and disposal by means of sanitary landfill, incineration, and composting. Field trips are required.

PCT 223. WASTEWATER TREATMENT. Class 3, Lab. 3, cr. 4. Prerequisite or corequisite: CET 253.
Fundamental aspects of wastewater treatment, including sanitary and storm water collection systems, treatment procedures, and stream surveys. Field trips are required.

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Purdue University Publications

Separate bulletins are issued by each of the divisions listed below and are available free of charge. Address all requests and communications to the Office of Admissions, Executive Building, Purdue University, Lafayette, Indiana 47907. (Please include your zip code.)

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- Schools of Engineering
- School of Home Economics
- School of Humanities, Social Science, and Education
- School of Industrial Management
- School of Pharmacy and Pharmacal Sciences
- School of Science
- School of Technology
- School of Veterinary Science and Medicine
- The Graduate School
- Calumet Campus
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OTHER RELATED PUBLICATIONS

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ENGINEERING

Aeronautical and Astronautical Engineering. Agricultural Engineering. Chemical Engineering. Civil Engineering. Electrical Engineering. Engineering Sciences. Industrial Engineering. Interdisciplinary Engineering Studies. Mechanical Engineering. Materials Science and Metallurgical Engineering. Nuclear Engineering.

HOME ECONOMICS

Retailing in the Fashion Field. Textile Technology. General Housing. Home Furnishings. Home Planning. Household Equipment. Dietetics. Foods in Business. Foods or Nutrition Research. Food Science. Restaurant-Institutional Management. Vocational Home Economics Teaching. General Home Economics Teaching. Nursery-Kindergarten Teaching. Interior Design. Social Welfare. Home Economics Extension. Food Service and Lodging Supervision (Associate Degree Program).

HUMANITIES, SOCIAL SCIENCE, AND EDUCATION

Audiology and Speech Sciences: Speech and Hearing Therapy. Child Development and Family Life: Human Development. Communication: General Interpersonal Communication, Mass Communication (Radio, Television, Film, Journalism). Creative Arts: Art History, Fine Arts, Industrial Design, Interior Design, Visual Design, Theatre (Acting Design, Directing). English: American Literature, Creative Writing, English Literature. History: American Civilization, American History, European History. Modern Languages: French, German, Russian, Spanish. Philosophy. Physical Education: Health, Recreation, Physical Education Research (Women). Political Science. Psychology. Science and Culture. Sociology: Anthropology. Teacher Certification Programs: Elementary Education with endorsements in Foreign Language, Junior High, Kindergarten, Physical Education, School Library and Audiovisual Services, Special Education, Speech and Hearing Therapy; High School Teaching in Art, English, French, German, Health and Physical Education, Recreation, Russian, School Library and Audiovisual Services, Social Studies, Spanish, Speech; Speech and Hearing Certificate.

INDUSTRIAL MANAGEMENT

Administrative Sciences. Economics. Industrial Management and Transportation. Industrial Relations.

PHARMACY AND PHARMACAL SCIENCES

Bionucleonics, Health Physics, and Environmental Health. Clinical Pharmacy. Industrial and Physical Pharmacy. Medicinal Chemistry and Pharmacognosy. Pharmacology and Toxicology. Pharmacy Administration.

SCIENCE

Botany. Chemistry. Computer Sciences. General Biology. Geology. Mathematics. Medical Technology. Meteorology. Microbiology. Physics. Statistics. Zoology. Predentistry. Premedicine. Prepharmacy. Teacher Certification Programs for High School and Junior High School Teaching in Biology, Chemistry, General Science, Mathematics, and Physics.

TECHNOLOGY

Industrial Education. Industrial Supervision. Nursing. Technology: Architectural, Aviation Electronics, Aviation Maintenance, Chemical, Civil Engineering, Computer, Electrical Engineering, Foundry, General Aviation Flight, Industrial Engineering, Industrial Illustration, Mechanical Design-Drafting, Mechanical Engineering, Mental Health, Metallurgical Engineering, Pollution Control, Professional Pilot.

VETERINARY SCIENCE AND MEDICINE

D.V.M. degree. Graduate programs in Anatomy, Immunology, Microbiology, Parasitology, Pathology, Pharmacology, Physiology, Clinical Sciences.