

GENERAL BULLETIN 1983-85

KANSAS TECHNICAL INSTITUTE



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Vol. 9
KTI



KANSAS TECHNICAL INSTITUTE

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GENERAL INFORMATION BULLETIN

Science and Engineering Technology

Volume 9

1983-85



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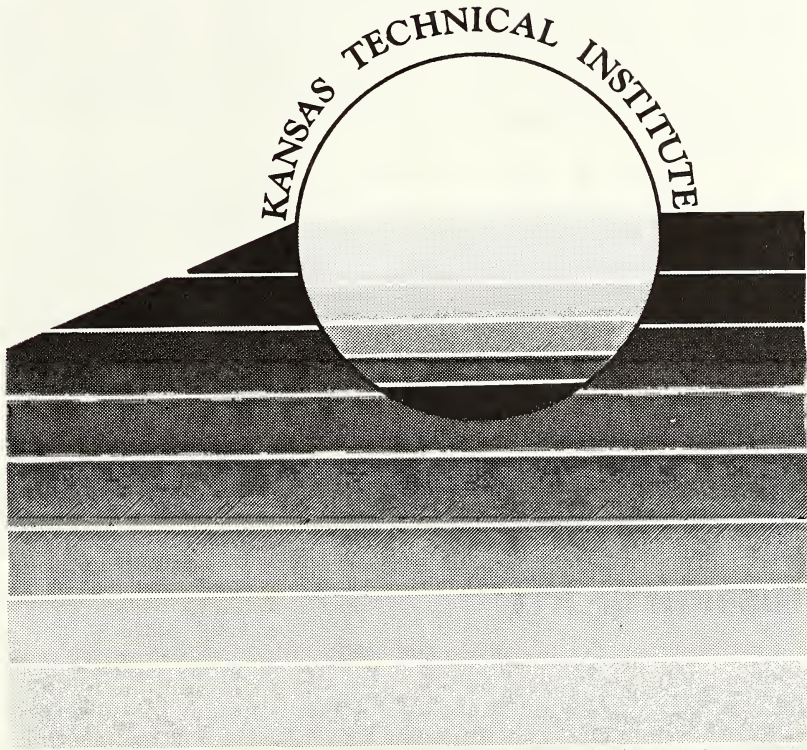
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DEGREE OR CERTIFICATE PROGRAMS

Aviation Maintenance (Certificate)
Helicopter Maintenance (Certificate)
Aeronautical Technology
Civil Engineering Technology
Surveying Technology
Computer Science Technology
Electronic Data Processing
Electronic Engineering Technology
Computer Engineering Technology
General Engineering Technology
Chemical Engineering Technology
Mechanical Engineering Technology
Solar Energy Utilization Technology



GENERAL INFORMATION



HISTORY AND DEVELOPMENT OF THE INSTITUTE

Kansas Technical Institute was created by the 1965 Kansas Legislature with the passage of House Bill 1101 titled "The State Education Authority Act." This bill provided for the establishment of a state technical institute to offer two-year programs of Science and Engineering Technology. Originally called Schilling Institute, the campus was developed on property that was formerly a part of Schilling Air Force Base.

The Kansas legislature, during the 1968 General Session, changed the name of the school to Kansas Technical Institute and transferred the responsibility for the school to the newly created State Board of Education. In 1976, the Legislature transferred the responsibility for the college to the Kansas Board of Regents, thus establishing Kansas Technical Institute as the seventh state institution for higher education under the Board.

Enrollment of 93 students in four fields of study for the fall semester of 1966 was the start of an educational opportunity new to Kansas. The enrollment trend has continued upward since that time with over 600 students presently enrolled in thirteen programs of study. Steady growth is expected to continue during the remainder of this century with 2,000 students anticipated by the year 2000.

All programs of study at KTI are two-year Associate of Technology degree or certificate programs. All programs have been designed to assure standards of excellence. The certificate program in Airframe and Powerplant Maintenance has been continuously certificated by the Federal Aviation Agency since its start in 1966. Four programs in Engineering Technology have been accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). The college is also accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools. The reputation of the programs and the strong affiliation the institute maintains with professional and technical associations has been a major factor in the success of and high regard held for Kansas Tech graduates.

MISSION OF KTI

Kansas Technical Institute is the state college whose mission is specifically devoted to technological education and training in Kansas. The following mission statement, which is consistent with the broad mission outlined in KSA 72-4332, was received by the Board of Regents at the regular meeting of the Board in December, 1976: "Kansas Technical Institute shall be responsible for providing technical education and training in the fields of

engineering technology, science technology and related fields. The principal mission of the institute shall be the education of technologists and technicians in the general fields of engineering and science. The mission of the institute shall include programs approved by the Board of Regents and special institutes, seminars, short courses and workshops at appropriate locations in Kansas as approved by the Extension Officer of the Board of Regents.”

GOALS OF THE COLLEGE

The college has the following goals for fulfilling its statewide mission:

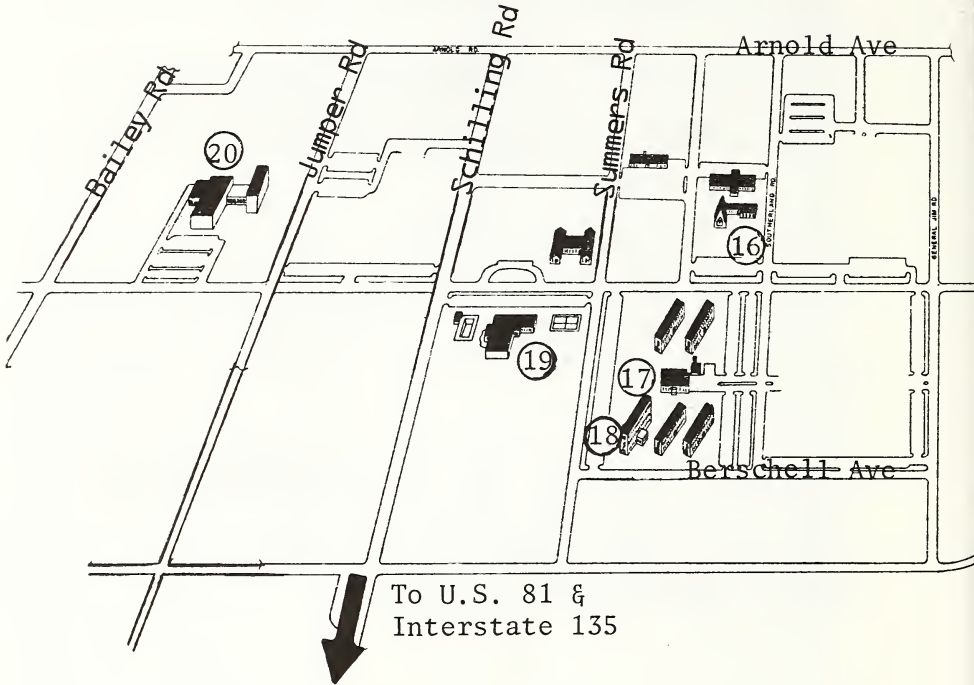
Resident Instruction: A primary goal of Kansas Technical Institute is to provide college-level programs in Engineering Technology, Science Technology and related fields to prepare the student for immediate employment as a Technician or Technologist upon graduation.

Foundation Courses: A secondary goal of the college is to provide a well balanced discipline of mathematics, physical science, communications skills and technical specialty skills to provide graduates a base upon which they can build and expand.

A third goal of the college is to provide a sound foundation of scientific and engineering technology principles that will permit graduates, who so desire, to pursue advanced academic study in their field of specialization.

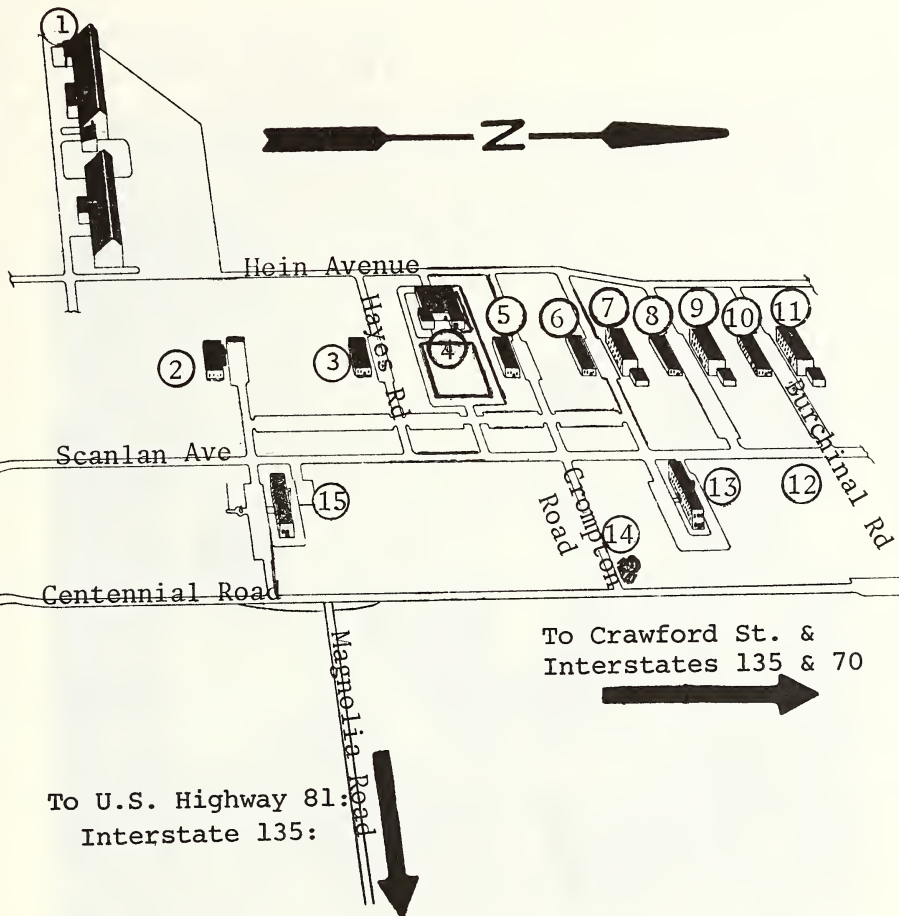
Community Service and Continuing Education: It is a goal of the college to develop and offer such specialized technical and related courses to the adult community of Kansas as is compatible with KSA 72-4332. Technical and specialized courses may include, but are not limited to, short courses, seminars, institutes, workshops and credit hour courses.

KTI Campus



Campus Map

- 1 Aeronautical Technology Laboratories
- 2 H. M. Neely Exposition Center (Aero Tech Office)
- 3 Civil Technology Laboratories
- 4 Electronic/Computer Technologies
- 5 James Tullis Resource Center (Library)
- 6 Student Union/Bookstore
- 7 General Technology
- 8 Mechanical Technology Laboratories
- 9 Mechanical/Civil Technologies
- 10 Maintenance Repair (Shops)



To U.S. Highway 81:
Interstate 135:

To Crawford St. &
Interstates 135 & 70

- 11 Physical Plant
- 12 Wilmer Thaemert Recreation Area
- 13 General Studies
- 14 KTI Logo
- 15 Administration Building
- 16 Chapel & Chapel Annex
- 17 Cafeteria/Conference & Meeting Rooms
- 18 KTI Dormitory
- 19 KTI Community Center
- 20 Gymnasium, KTI/Salina Recreation Commission



ADMISSION AND FEES



ADMISSION REQUIREMENTS

Applications for admission are to be sent to the Office of Admissions. All applicants must have either graduated from a state accepted high school or have passed the General Educational Development Test (G.E.D.). Residents of Kansas who graduate from an accredited Kansas high school are automatically admissible to Kansas Technical Institute.

The following procedures should be followed to apply for admission to the Institute:

1. Submit to the Institute a completed Application Form for Admissions with a \$25 application fee, which is not refundable.
2. Have scores from either the American College Testing (A.C.T.) exam or the Scholastic Aptitude Test (S.A.T.) sent to the Office of Admissions. (This requirement may be waived in some instances.)
3. Have sent directly to the Institute a transcript of all high school work. If not a high school graduate, then an official copy of the scores attained on the G.E.D. test must be provided.
4. Applicants must have official transcripts of all college-level work completed sent directly to the admissions office.

Each applicant will be notified by mail as to his or her status. Applicants can not be classified as formally accepted students until the above entry criteria have been met.

ADMISSION AS A TRANSFER STUDENT

Applicants for admission as transfer students from a regionally accredited university or college may be accepted if their records indicate the ability to successfully pursue the courses in their chosen curriculum.

The procedure for a transfer student is as follows:

1. Submit a completed Application for Admission form.
2. Provide an official transcript from each post-secondary school attended and a copy of the high school transcript.
3. If waiver of course requirements is desired prior to enrollment, it is advisable to submit all of the above information to the Registrar no later than thirty days before the Institute's enrollment date. All credits will be evaluated by the heads of the departments that offer the courses to determine if they relate to Kansas Tech courses in the chosen field of study. Those courses that do relate and meet the necessary criteria of content and success level will be recommended for approval. A Waiver of Credit form will be issued by the Registrar to appropriate department heads. All courses approved on the Waiver of Credit form will become part of the student's transcript.

OUT-OF-STATE APPLICANTS

Out-of-state applicants for admission to Kansas Technical Institute will be required to pay non-resident fees (see fee schedule) and generally must have a good academic rank in their high school graduating class. The residence of students entering Kansas Technical Institute is determined by the Kansas State Board of Regents as follows:

“Persons entering the state educational institutions who, if adults, have not been, or if minors, whose parents have not been residents of the state of Kansas for twelve (12) months prior to matriculation in the state educational institutions, are non-residents for the purpose of payment of matriculation and incidental fees.”

FOREIGN APPLICANTS

Foreign applicants should contact the Dean of Student Services for information concerning enrollment procedures. Correspondence should begin no less than six (6) months prior to the desired enrollment date. Foreign students will be considered as out-of-state applicants for the purpose of paying student fees. They will also be required to document that they have adequate funds to meet their cost of education. Any foreign applicants for which English is not a native language must supply scores on the Test of English as a Foreign Language (T.O.E.F.L.). To be admitted, an applicant must have scored 550 or above on this exam.

PRE-ADMISSION TESTING

All applicants for enrollment will be required to take the American College Testing (ACT) test or the Scholastic Aptitude Test (SAT) prior to enrollment. High school students should arrange with their counselor or principal to take the tests during their senior year and request that these scores be sent to Kansas Technical Institute. Other applicants may contact a local high school or the Student Services Office at the Institute for test information on the American College Testing program. Residual testing is administered at KTI at the fall enrollment period. The battery is used as a counseling and guidance aid only and is not used as a pre-admission requirement. The ACT college code number assigned to Kansas Technical Institute is 1453. The SAT college code number assigned to Kansas Technical Institute is 006345.

Prior to their initial enrollment, all new students will be offered a mathematics placement test administered by the Institute. This test helps in advising whether a student should enroll in one of the developmental mathematics courses offered by K.T.I. Stu-

dents entering with transfer credits in mathematics equivalent to K.T.I. entry level math courses may not need to take this test.

FEES AND EXPENSES

The amount a student spends and the actual cost of obtaining an education at Kansas Technical Institute are two different items. A student can anticipate certain fixed expenses, such as enrollment fees, but beyond that, financial outlays depend to a considerable extent on the personal habits and management ability of the student.

ENROLLMENT FEES

Fees at Kansas Technical Institute are established by the State Board of Regents and will be published periodically in the General Bulletin Supplement. Students enrolled in seven (7) or more regular semester hours are full-time students for fee purposes. Students enrolled in six (6) regular semester hours or less are part-time students for fee purposes and will be assessed according to the part-time schedule.

REFUNDS (Fees other than Dormitory & Food Service)

A student who enrolls at Kansas Technical Institute, but who finds it necessary to withdraw from school, is entitled to a refund of enrollment fees as determined by the Business Office.

<i>Regular Semester</i>	<i>Refund</i>
Through Friday on the week of Registration	100%
Through Friday the second week	75%
Through Friday the third week	50%
After third week and through 20th day	25%
<i>Summer Session</i>	
Through the first class day	100%
Through Friday of the first class week	50%
Through Friday of the second class week	25%

INCIDENTAL FEES

The Incidental Fee (tuition) is used to pay, in part, costs of administration, operation, maintenance, equipment, library books, and other supplies.

STUDENT ACTIVITY FEES

The Student Activity Fees are used to financially support student activities, including intramural sports, student organizations, intercollegiate athletics, and student dances.

STUDENT UNION FEES

The Student Union Fees are used for the Student Union development and activities.

VEHICLE REGISTRATION FEES

Students enrolled at the Institute who plan to operate motor vehicles on the campus must register them with the Business Office in the Administration Building. The student will be issued an identification sticker permitting parking in all non-restricted parking areas. Violation of traffic and parking regulations will result in progressive fines and, if excessive, may result in dismissal from the Institute.



ACADEMIC INFORMATION

KANSAS TECHNICAL INSTITUTE

The logo consists of a circular emblem containing a landscape scene with a horizon line and a sky. This emblem is centered over a background of horizontal stripes that vary in width and shading, creating a textured, layered effect. The text "KANSAS TECHNICAL INSTITUTE" is arched over the top of the circular emblem.

ACADEMIC ADVISING

A very important factor in the success of a student at KTI is the quality of relationship between the student and his advisor. The advising process is an integral part of the education packet offered at the Institute and includes: career planning; college adjustment guidance; individual counseling; referrals; and selection of courses in developing a program of study consistent with the student's goals, interests, and abilities.

Each student majoring in a program of study will be assigned an academic advisor to meet with regularly to determine needs and direction toward achievement of personal goals in his education.

LENGTH OF ACADEMIC PROGRAMS

The academic year at KTI consists of two sixteen-week semesters and an eight week summer session. All degree programs are designed so that students may complete a degree over four regular semesters, assuming they carry the prescribed full time credit load and do not need developmental coursework. Summer sessions are not included in the normal two-year sequence, although many students choose to enroll during the summers to take extra courses or to make up courses missed previously.

Students beginning programs in the spring semester may be unable to complete their degrees in the normal amount of time due to the sequencing of required courses.

SEMESTER CREDITS

The unit of measurement for completed course work is the "semester credit." Each KTI course carries an assigned value of semester credits. For each credit hour of lecture or recitation credit a course carries, there will be one 50 minute class meeting per week. In addition, the student can normally expect to spend two hours of out-of-class study or homework per week for each 50 minute class meeting. For most courses carrying laboratory credit hours, there will be a one hour, 50 minute meeting per week for each credit hour, with some possible additional outside assignments.

FULL-TIME STATUS

The minimum load for a student to be considered a full-time student is 12 credit hours. This status applies to certain student benefits such as H.E.A.F. loans, basic grants, full-time veterans, and other forms of financial assistance.

STUDENT LOAD

A student may enroll in up to eighteen semester credits of course work without special permission. Those who desire to enroll in more than eighteen credits must obtain written permission from the Academic Dean. Generally, a student may not enroll in more than 18 semester credits their first semester at the Institute. A student with a poor scholastic record or a student who is employed part-time may be counseled to carry a reduced load. (See Reinstatement.)

SCHEDULING OF CLASSES

A schedule of classes is established by the faculty for each semester and the summer session. A copy of the class schedule can be obtained from the Registrar's Office.

In general, classes are scheduled Monday through Friday. Most classes are scheduled between 8:00 a.m. and 5:00 p.m. However, a number of classes are scheduled in the evenings to extend the services of instruction to persons who cannot attend daytime classes.

PRE-REGISTRATION

Students are encouraged to select courses for the following regular semester during the announced pre-enrollment times. For fall semester courses this is usually in April, for spring semester courses, in November. Pre-enrolling allows students and advisors to plan courses early, to reduce the possibility of encountering closed classes, and to reduce the time involved in the registration process just prior to the start of the semester. Students planning to attend KTI for the first time are encouraged to pre-enroll for courses at any of the times announced by the Office of Admissions.

AUDITING COURSES

Auditing is attending a class regularly without the requirement of participating in class work and without receiving academic credit.

A student may enroll in a course for audit with permission from the instructor and upon payment of the course fee. Courses taken for audit will be posted to the student's transcript as audit (AU). A student may not switch from regular enrollment to audit in a course after the Friday of the eighth week of the regular semester.

SPECIAL STUDENTS

The "special" student classification is given to students who are not seeking a degree. Normally, the student who enrolls part-time

in regular or continuing education courses would be classed as a special student. High school students allowed to take KTI courses prior to their graduation are automatically classed as special students. Special students are generally not required to submit high school and college transcripts. They are not considered to be fully admitted, degree-seeking students, and may not apply for candidacy for a degree.

Special students are subject to the same regulations, fees, and attendance responsibilities as regular degree-seeking students.

Students desiring to work toward a degree but are uncertain about their major may opt for the "undeclared" classification. These students must supply official transcripts or GED scores.

FRESHMAN/SOPHOMORE STANDING

A student who has graduated from high school or earned equivalence is considered a freshman. A student is considered a sophomore upon completion of 30 semester hours.

CLASS ATTENDANCE

Regular and punctual class attendance is important to a high standard of work. The student is expected to recognize the importance of regular class attendance.

Each instructor is responsible for advising the students of the attendance and tardiness criteria in his class. The student is expected to know and comply with each instructor's regulations. It is the student's responsibility to make up all work missed due to the absence.

EXAMINATIONS

Examinations play a vital part in determining a student's performance in class. Each instructor will schedule a sufficient number of examinations to determine the student's progress in the course.

Final examinations are considered a part of each course and are generally scheduled during the last week of each regular semester and summer session. All students are expected to take a final examination in each course during the scheduled period. In emergency cases, a student may take a final examination at other than the scheduled time.

GRADING SYSTEM

The Institute uses the following grade and point system:

<i>Grade</i>	<i>Type of Performance</i>	<i>Grade Points</i>
A	Superior	4
B	Above average	3
C	Average	2

D	Below average	1
F	Failure to earn credit	0
I	Incomplete	0
Au	Audit	0
S	Satisfactory (Pass)	0
U	Unsatisfactory (Fail)	0
WP	Withdrew Passing	0
WF	Withdrew Failing	0

A grade of "I" (Incomplete) may be given in special cases where a student was unable to complete all work in a course. If, in the opinion of the instructor, justifiable reasons exist to explain unfinished work, a report of Incomplete (I) may be given along with a tentative grade. (Generally, the grade earned if the unfinished work was not to be completed.) Incomplete grades from the spring and summer semesters must be removed prior to the beginning of the registration period for the following fall semester. Incompletes from the fall semester must be removed prior to the beginning of registration for the following spring semester. If the work is not completed by these deadlines, the tentative grade will be recorded as the permanent course grade. If no tentative grade is given, an "F" will become the permanent grade.

The grade point average for each student is reported for each semester and is a cumulative average for the entire period of attendance. This average is computed by dividing the total number of grade points earned by the total number of semester credits.

PRESIDENT'S HONOR ROLL

Any student carrying a full-time load (12 hours or more) and earning a 3.75 or better grade point average with no grade below a "C" will be listed on the President's Honor Roll for that semester.

DEAN'S HONOR ROLL

Any student carrying a full-time load (12 hours or more) and earning a 3.25 to 3.75 grade point average with no grade below a "C" will be listed on the Dean's Honor Roll for that semester.

CREDIT BY SPECIAL EXAMINATION

Any student who feels that past education or experience has provided the basic knowledge that is equivalent to a course may request to be given a special examination for that course.

Credit in any subject may be granted by special examination. Permission to take a special examination should be initiated through the department head who requests a waiver of credit form from the Registrar.

The fee for taking a special examination for course credit is three dollars (\$3.00) per semester credit.

Upon successfully completing the special examination, the form will then become part of the student's permanent file and the particular courses noted on the student's transcript.

CLEP

CLEP provides an excellent means of obtaining college credit for skills or knowledge obtained through experience in areas outside of the formal college environment. Any student has the opportunity to utilize for credit experience gained through employment, formal and informal study, military experience and training, and many other areas where knowledge or skill is acquired.

CLEP examinations are administered at test centers throughout the country at specific periods during the year. Students wishing to take a CLEP examination must complete an application form and submit it, along with the appropriate test fees, to the center of their choice.

KTI accepts for waiver of credit many of the CLEP subject examinations. Interested persons should contact the Registrar's Office for specific details.

WITHDRAWAL FROM CLASS

Students are responsible for completing all courses in which they enroll. They may withdraw from any course within the limits provided below. It is the student's responsibility to insure that all withdrawal procedures are completed.

1. If a withdrawal is completed prior to Friday (5 p.m.) of the eighth week of the regular semester, no record of the class will appear on the individual's transcript.
2. A withdrawal after Friday (5 p.m.) of the eighth week thru Friday (5 p.m.) of the thirteenth week of the regular semester will result in a grade of "WP" (withdrew-passing) or "WF" (withdrew-failing) depending on the class standing at the time of withdrawal.
3. There will be no withdrawal from class after Friday (5 p.m.) of the thirteenth week. The grade earned will be the grade received.

For summer session drop dates, consult the bulletin supplement available from the Student Services Office.

Students wishing to withdraw from a class shall initiate such action with their major advisor. They will then be advised of the procedure they are to follow to complete the withdrawal action.

ACADEMIC PROBATION AND DISMISSAL

Students are expected to attend class regularly and maintain

normal progress toward the completion of their program. Students who meet the grade standards of the institution will remain in "good standing." Students failing to meet minimum grade standards will be subject to "academic probation" or "academic dismissal" according to the following rules:

Students presently in good standing who complete seven credits or more in a given semester will be placed on academic probation if their semester grade point average is below 1.8. Students on academic probation completing seven credits or more in a given semester will be dismissed if their semester g.p.a. is below 2.0. Students on academic probation will be returned to good standing status by earning a cumulative g.p.a. of 2.0 or higher. Students completing six credits or less in a given semester will not be placed on academic probation or dismissed, no matter what their semester g.p.a. is.

Students dismissed for academic performance will not be allowed to reenroll except with the special permission of, and under conditions established by, the Academic Standards Committee.

REINSTATEMENT

Students who have been dismissed for academic reasons may petition for reinstatement.

A student desiring to be reinstated will be advised of the procedure by the Academic Dean's office. Official action will be taken on the request prior to each enrollment period.

Students who are reinstated will be on academic probation for the semester in which they are reinstated and may be required to carry a reduced course load.

REPETITION OF COURSES

A course may be repeated to improve a grade. All grades received in a given course will be shown on the student's transcript; however, the grade received the last time the course is taken will be the grade used for computing the cumulative grade point average.

TRANSCRIPT

The transcript is the official record of a student's success at the Institute. The transcript is a record that colleges and employers use to evaluate a student or graduate of the Institute. It must be certified by the Registrar before it will be used as an official record.

Copies of the transcript may be obtained by contacting the Registrar's office. Each student is entitled to five transcripts free of charge. A fee of \$1.00 is charged for each additional transcript.

Transcript and/or grades will not be released for the student who is indebted to the college.

DIRECTORY INFORMATION

Certain information concerning students is considered to be open to the public upon inquiry. This public information is called directory information and includes name, local and permanent address, parents' name and address, telephone number, date and place of birth, curriculum, dates of attendance, degrees, certificates and academic awards given, academic class, sex, previous educational institutions attended, and participation in officially recognized organizations and activities.

Directory information will be released upon inquiry unless the student has requested, within 10 days after registering, that specific items not be released. This request should be directed to the Registrar's office.

APPLICATION FOR GRADUATION

KTI awards degrees only once per year, at commencement ceremonies following the spring semester. Each candidate for graduation shall file a diploma application with the Registrar's Office prior to the end of the second week of classes of his or her final semester of enrollment.

Any petition which the student wishes to present in connection with his or her candidacy for graduation should be submitted prior to enrollment for the final term.

GRADUATION REQUIREMENTS

The Board of Regents is authorized by the Legislature to empower the President to grant Associate of Technology Degrees/or certificates by type and title as approved by the Board of Regents. Any student who plans to obtain the degree/certificate should be aware of the following criteria used by the faculty for recommending degree/certificate candidates to the President:

The candidates for the degrees/certificates must:

1. successfully complete or obtain a waiver for each course in their study,
2. earn a 2.000 overall grade point average in all courses in their study which are taken at K.T.I.,
3. be screened and recommended for graduation by the Academic Standards Committee, and
4. attend commencement exercises or obtain written permission for graduation in absentia.*

* A written request for graduation in absentia will be made as soon as the candidate becomes aware of circumstances which will prevent attendance at commencement. Such request will be directed to the Academic Dean.

Any student to be considered for graduation shall have successfully completed his final fifteen (15) semester credits in residence at the Institute.

GRADUATION WITH HONORS

Students maintaining a high level of academic achievement are recognized at graduation by Honors and High Honors recognition.

The requirement for graduation with High Honors is that the student shall earn an overall grade point average of 3.85 or above based on a 4.00 point system, and a 3.9 in course work in the major field.

The requirement for graduation with Honors is that the student shall earn an overall grade point average of 3.75 or above, and a 3.8 in all course work in the major field.

A grade of "D" or "F" in any course will eliminate any recognition of Honors or High Honors.

LIBRARY SERVICES

A vital part of every technical education center is the availability of relevant and current library resources. The library, called the James E. Tullis Resource Center at Kansas Tech, serves many functions which contribute toward better academic progress of the student body.

The library houses a collection of authoritative, up-to-date technical information. It provides supplementary reference material which offers a wide range of modern technological subject matter.


Audio visual materials in the library and in each department offer further opportunity for curriculum enrichment.

An inviting atmosphere is offered in the well-lighted and attractive library. The staff is available to assist students in locating materials and in the general use of the library.



**STUDENT
SERVICES
AND
ACTIVITIES**

KANSAS TECHNICAL INSTITUTE



STUDENT SERVICES

The primary goal of Kansas Technical Institute is to prepare its students for rewarding and satisfying careers in their chosen areas of specialization. To attain this goal, the Institute not only provides educational opportunities in the classroom and laboratories, but also provides the means whereby students can develop their individual talents and meet their many non-academic needs.

Students entering the Institute are considered to be mature individuals who are responsible for their own behavior. High standards of personal, ethical, and moral conduct are expected of all students, on campus and elsewhere. The capacity for sound planning and the desire to establish good study and work habits are characteristic of a successful student.

Students are expected to use the Institute facilities with consideration, and to conduct themselves with decorum. Students who refuse to conform to accepted standards of conduct will be dismissed from the Institute.

COUNSELING

Kansas Technical Institute administrative and faculty personnel are available at all times to counsel students in their educational programs and to help the student who seeks vocational guidance. Students will find the Institute personnel are eager to contribute their training and knowledge to aid students in solving their specific problems.

Each student is assigned a faculty advisor who will work with the student to help him solve any academic problems that may arise. Kansas Tech faculty members have a great amount of industrial experience that qualifies them to assist students in vocational guidance.

Students are strongly encouraged to discuss personal and non-academic problems with personnel of the Student Services Office. Of course the student may wish to consult solely with his faculty advisor. In either case, every effort will be made to help students through personal counseling and guidance while they are enrolled in an educational program at Kansas Technical Institute.

FINANCIAL AID

Financial aid for college attendance is in the process of undergoing some major changes. The current economic times are forcing reductions in the amount of aid available to college students.

However, it is still the policy of the Financial Aid Office at Kansas Technical Institute to provide financial assistance to students who qualify under the federal regulations governing the

aid programs. Such aid is based on demonstrated financial need without regard to sex, creed, color or ethnic background.

Because there are limited funds available for some types of aid, it is advisable to apply for financial aid early. The office prefers that the application for aid be received by March 15th, however all applicants will be considered for all types of aid. When financial aid awards are mailed out, they will include two copies of an acceptance letter. These acceptance letters should be signed by the student and returned to the Financial Aid Office within two weeks of receipt of the award letter. Failure to return the letter within the allotted time will be considered rejection of the award. A student may accept or reject any portion of the financial aid package offered in the award letter. Guaranteed Student Loan amounts shown in the award letter will be recommended amounts. A student may actually be able to borrow more or less the recommended loan amount.

STUDENT'S RIGHTS

You have the right to know what financial assistance is available, including information on all federal, state and institutional Financial Aid Programs.

You have the right to know the deadlines for submitting applications for each of the financial aid programs available.

You have the right to know the criteria used by the institution to select financial aid recipients.

You have the right to know how the college determines your financial need. This process includes how costs for tuition and fees, room and board, travel, books and supplies, personal and miscellaneous expenses, etc., are considered in your budget.

You have the right to know how much of your financial need, as determined by the institution, has been met.

You have the right to request from the financial aid office an explanation of the various programs in your student aid package. If you believe you have been treated unfairly, you have the right to request reconsideration of the award which was made to you.

You have the right to know what portion of the financial aid you received must be repaid, and what portion is grant aid. If the aid is loan, you have the right to know what the rate of interest is, the payback procedures, the length of time you have to repay the loan, and when payment is to begin.

You have the right to know how the college determines whether you are making satisfactory progress, and what happens if you are not.

STUDENT'S RESPONSIBILITIES

It is your responsibility to review and consider all information about the college's program before you enroll.

It is your responsibility to complete all application forms accurately and submit them on time to the right place.

It is your responsibility to pay special attention to, and accurately complete, your application for student financial aid. Errors can result in long delays in your receipt of financial aid. Intentional misreporting of information on application forms for federal financial aid is a violation of law and is considered a criminal offense subject to penalties under the U.S. Criminal Code.

It is your responsibility to return all additional documentation, verification, corrections, and/or new information requested by either the financial aid office or the agency to which you submitted your application.

It is your responsibility to read and understand all forms that you are asked to sign, and keep copies of them.

It is your responsibility to accept responsibility for all agreements you sign.

It is your responsibility to know and comply with the deadlines for application or reapplication for aid.

It is your responsibility to know and comply with your college's refund procedures.

It is your responsibility to keep the college informed about other scholarships and loans accepted or pending from other sources, such as business foundations, private organizations, and state scholarship programs. Failure to do so may result in forfeiture of all aid received from the college.

FINANCIAL AID PROGRAMS

Pell (Basic) Grant Program

This is a federally funded program available to eligible students attending any approved post-secondary institution. The amount of the individual non-repayable grants varies, depending on financial need, living arrangements, marital status and dependent/independent status. An undergraduate student who has not received a bachelor's degree from another institution and is enrolled on at least a half-time basis is eligible to apply.

College Work-Study Program

The College Work-Study Program was established to assist students of low-income families by providing jobs on campus. These jobs are available in various departments and will permit a student to earn part of his educational expenses. The total amount a student may earn depends on the financial need shown. A student may not work more than 20 hours per week while school is in session. The pay rate closely follows the minimum wage as established by law. It may lag behind the established laws for short periods of time due to budgeting problems. The school and

the federal government share the cost of the College Work-Study Program.

Supplemental Educational Opportunity Grant (SEOG) Program

This federally funded program is for students who have exceptionally high financial need as exhibited through the "Application Procedures" outlined above. An SEOG award ranges from \$200 to \$1500 per year and does not have to be repaid. To be eligible students must be enrolled at least half-time or accepted for enrollment. The grants are awarded by the Financial Aid Committee.

Scholarships/Sponsorships

A limited number of scholarships are made available to KTI students from interested individuals, businesses, and organizations. Eligibility requirements vary according to the scholarships. The regular "Application Procedures" should be followed to apply for any of these scholarships; some sponsorships will require additional application procedures. Selection is made by the Financial Aid Committee. The Financial Aid Office should be consulted to obtain a listing of the scholarship/sponsorships available.

Higher Education Assistance Foundation (HEAF)

The HEAF program enables students to borrow directly from local banks or participating lenders who are willing to make these educational loans. Repayment of the loan is guaranteed by the federal government. The maximum loan per academic year is \$2,500, with repayment normally begins six months after graduation or withdrawal from the post-secondary education. Maximum annual interest is 9% on the unpaid balance.

Those students finding themselves unable to locate a local lender may apply for a Higher Education Loan Program (HELP) loan and obtain a similar loan. First-time borrowers going through HELP will be limited to borrowing \$1,500 or half the cost of their educational expenses for the academic year. The maximum total amount that can be borrowed by any individual student during undergraduate studies is \$12,500.

Students interested in this loan program should contact their local banks or the KTI Office of Financial Aid.

APPLICATION PROCEDURES

1. A student must be enrolled or accepted for admission before he will be considered for financial aid. (See Admission Requirements on page 14.)
2. A Kansas Student Data Form must be completed and submitted to the KTI Office of Financial Aid.

3. The American College Testing Program (A.C.T.) "Family Financial Statement", code 1453, must be completed for processing. A fee specified on the form is charged to process this financial need analysis. A financial need analysis must be on file before any financial aid, except loans, can be awarded.

4. Students applying for a Pell Grant only may apply directly to the federal program without paying a processing fee. Special application forms are available in the Financial Aid Office. The student will receive a student aid report as a result of this application which will include instructions to forward the report to the Financial Aid Office.

After the applications have been processed, the detailed financial aid need analyses will be used by the Financial Aid Committee in determining the student's financial need and corresponding "financial aid package" for that student.

Although no specific application deadline exists for these programs, it is recommended that students interested in financial aid have all completed forms submitted by March 15 for fall semester enrollment. Students should be aware that some scholarships or sponsorships may have specific application deadlines.

DORMITORY

Recognizing the benefits to be gained from experience in group living, Kansas Technical Institute provides modern dormitory and dining facilities for students enrolled in a resident instruction program.

All single freshmen male students who live beyond commuting distance will be required to live in a dormitory approved by the Institute for a period of two (2) semesters, summer school not included as an academic semester.

The following types of students are permitted to take residence elsewhere:

1. A student who has attended another institution of higher learning for two (2) semesters.
2. A student who is a veteran.
3. A student who is twenty-one years of age or older.
4. Special cases include the following:
 - a. Students living with relatives who live within commuting distance of Salina. This will require a signed, notarized statement from the student's parent. This form must be obtained from the Student Services Office.
 - b. Medical reasons, which require a doctor's certification.
 - c. Other similar situations.

All exceptions in this category require approval by the Dean of Student Services.

Dormitory rooms are reserved by paying a deposit of \$25.00 which is not refundable after August 1 for the Fall semester or after January 1 for the Spring semester. Reservations, including the deposit, should be made as early as possible to insure availability of housing. As soon as an applicant's reservation has been confirmed by the Institute contracts for room and board will be sent to applicants for their signature. Housing regulations and campus rules of conduct will be printed on and attached to the contract and each student must agree to abide by these rules and regulations.

If the student withdraws from the Institute or obtains special permission to move from the dormitory after the beginning of the semester, the contract will be cancelled and a refund will be made according to the refund schedule printed on the reverse side of the contract form. Generally, no refund will be made for students withdrawing during the last six (6) weeks of classes of a semester or the last three (3) weeks of a summer session.

A damage deposit of \$25.00 is required when a student moves into the dormitory. This deposit will be refunded, if there is no damage to the room, when the resident moves from the dorm.

Dormitory facilities are designed to accommodate two (2) students per room. All rooms are equipped with single beds, adequate storage, and comfortable furniture. Dormitory fees do not include weekly linen service. Blankets, pillows, and other incidental room furnishings must also be supplied by occupants.

Kansas Tech women will be aided in finding comparable housing. They should contact the Student Services Office to obtain a listing of current vacancies.

FOOD SERVICE

A pleasant cafeteria and conference center is located adjacent to the men's dormitory for convenience and enjoyment of students, staff and visitors. The preparation of food is under the supervision of qualified dietitians to insure balanced and wholesome meals. In addition to dormitory residents, all other students are encouraged to use the meal plans available through the Business Office.

OFF-CAMPUS AND MARRIED STUDENT HOUSING

Students who are not required to live in campus housing and who wish to seek residence in the local community should coordinate their search for housing through the Student Services Office. That office will post any known vacancies and if an adequate supply of vacancies is not available the Office of Student Services will refer students seeking housing to a local realtor for assistance.

VETERANS AFFAIRS

Kansas Technical Institute handles veteran assistance through the Student Services Office. Any questions relating to programs that are now in existence should be channeled through that office. This includes both of the current programs of entitlement as well as the veteran work study program, counseling, assistance in locating part-time jobs and the numerous other areas which are specific to the veteran's needs.

HEALTH SERVICE

Emergency first aid and minor medical services are provided on the Kansas Tech campus. Injuries or illnesses which require the attention of a physician are referred to Salina clinics which perform any medical service required by a student at Kansas Technical Institute. The cost of this service, of course, will be assumed by the student.

A special student health and accident program is available to all students enrolling at Kansas Technical Institute. This program is optional but deserves serious consideration from students who are not covered under some form of medical insurance or for those who wish to supplement their existing coverage. Representatives of the insurance agency will be available to explain the program and enroll students in the program in conjunction with the Institute's regular enrollment schedule.

PLACEMENT SERVICE

Kansas Technical Institute maintains close contact with numerous industries and business firms who are interested in graduates of technical institutes as prospective employees. Students taking advantage of the Institute's Placement Center are given the opportunity to discuss their employment goals with representatives of these firms during the final year of their educational programs. These discussions may take place on the campus, or if feasible, the student is provided the opportunity to visit the site of the firm itself in order to obtain a clearer picture of the working conditions and operations of the business establishment.

The Placement Center also maintains files of information for resource materials to use in the job pursuit process. References are available on industries and businesses in many cities in the United States. The staff of the Student Services Office is available for added guidance and assistance such as in the area of resumé preparation and career counseling.

The Placement Center does not limit its services to graduates of the Institute. Current files on part-time job opportunities are maintained for the use of students who are interested in supple-

menting their income while they are enrolled in their educational program.

STUDENT UNION

The Institute has a Student Union building designed to house all student activities. The Union is supported financially by the fees paid by all students during each enrollment period.

Some of the functions of the Student Union are to provide recreational activities such as pool and ping-pong, a well-equipped snack bar, meeting rooms for many of the campus organizations, and a quiet room for study.

The Student Union provides a comfortable, entertaining and relaxed atmosphere for people who enjoy the company of others.

CAMPUS BOOKSTORE

The campus bookstore, located in the Campus Activity Center, maintains a complete inventory of books and supplies necessary for Kansas Tech students. The bookstore will buy back used books at the end of the semester.

Class rings can be ordered through the bookstore, and a used paperback book exchange is maintained for students and staff. Clothing items with the school name and logo and snack foods are also available.

OUTLINE OF ACTIVITIES

A wide range of student activities is provided for the enjoyment and development of the student. These activities are widely diversified and all students, regardless of their personal interests, may find a group or club which will appeal to their special interests.

Students are urged to take an active role in the Student Governing Association (SGA). The SGA will participate in the development of basic codes of conduct, disciplinary measures, campus activities, and other facets of administrative organization and control. In addition, there is permanent student representation on the KTI President's Advisory Council.

Various social events will be scheduled throughout the year for the social development and enjoyment of Kansas Tech students. In most cases, the planning and organization of social activities will be the responsibility of representatives from the student body and the SGA.

The student chapter of the American Society of Certified Engineering Technicians (A.S.C.E.T.) is a very active campus organization. The chapter is the first student chapter established for student technicians in the United States. The ASCET chapter

provides students an opportunity to become part of what will be their future professional organization.

Students who receive a semester grade point average (GPA) of 3.25 or above for twelve or more semester credits are eligible for membership in the honor society, Tau Omicron Tau. The society performs helpful and honorable services on the campus and gives students an opportunity for leadership and service.

Student activities are limited only by the imagination of the student body and by common sense. Approval for clubs and activities rests with the SGA board. Campus activities have included: photography club, student yearbook, student newspaper, ham radio club, chess club, model airplane club and others that may be of interest to student groups.

RECREATION AND INTRAMURALS

Recognizing the benefits to be derived from activities other than those connected with formal instruction, Kansas Technical Institute has facilities for a well-rounded program of recreation and entertainment for its students.

Students may participate in intramural competition in a wide variety of sports. In some instances, a small fee may be assessed for participating teams or individuals to defray the cost of trophies and other awards of achievement.

PARTICIPATION

Students are encouraged to participate in all activities sponsored by school organizations. Individual participation is subject to the policies and regulations of the organization in which the student is involved.

ALUMNI ASSOCIATION

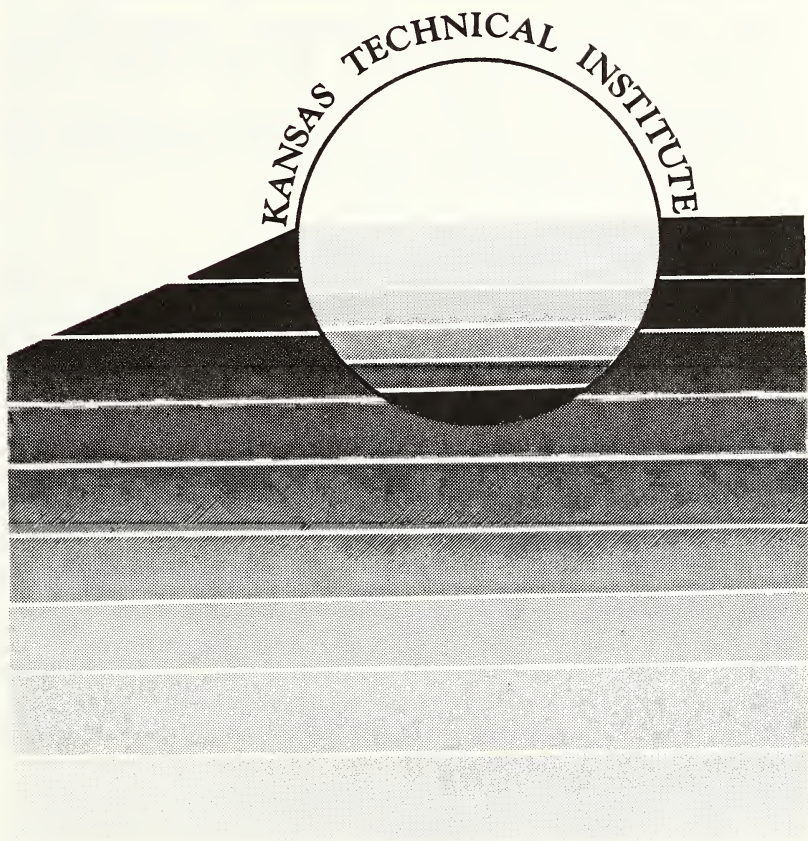
The recent but historic ten members of the Class of 1968 were the first to graduate from Kansas Technical Institute. Today, over 800 individuals hold a degree or certificate from KTI and they work as science and engineering technicians from coast to coast and in several foreign countries. These graduates carry with them the responsibility of representing their alma mater, and they are making a distinguishing mark for themselves in their respective fields of technology.

Each student upon enrollment becomes a potential alumnus. The KTI Alumni Association is vitally concerned with their progress, their achievements and their problems. One objective of this organization is to help students become successful graduates. The primary purpose of the Association is to provide services and benefits to each individual graduate and to the Institute.





CURRICULA AND COURSE DESCRIPTIONS



ACADEMIC DEPARTMENTS

Kansas Technical Institute is authorized to provide a wide range of instruction in the field of science and engineering technology. A standing committee reviews the needs for technology education in Kansas and works to develop a program specifically designed to meet those needs.

Presently there are six departments of instruction. They are:

- Aeronautical Technology
- Civil Engineering Technology
- Computer Science Technology
- Electronic Engineering Technology
- General Technology and General Studies
- Mechanical Engineering Technology

Detailed curricula and course descriptions are provided in this bulletin for each of the programs of study taught by these six departments.

ACCREDITATION AND CERTIFICATION

Kansas Technical Institute is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools.

Kansas Technical Institute offers four ABET * Accredited Engineering Technology Programs. Programs so accredited are:

- Civil Engineering Technology
- Computer Science Technology
- Electronic Engineering Technology
- Mechanical Engineering Technology

* The Accreditation Board for Engineering and Technology, (ABET), formerly the Engineers' Council for Professional Development (ECPD) is the nationally recognized agency for accrediting programs in engineering and engineering technology in the U.S. The purpose of ABET is stated in its constitution as ". . . the promotion and advancement of engineering education with a view to furthering the public welfare through the development of the better educated and qualified engineer, engineering technologist, engineering technician, and others engaged in engineering or engineering-related work." The participating bodies are the American Congress on Surveying and Mapping; the American Institute of Aeronautics and Astronautics, Inc.; the American Institute of Chemical Engineers; the American Institute of Industrial Engineers, Inc.; the American Institute of Mining, Metallurgical and Petroleum Engineers; the American Nuclear Society; the American Society of Agricultural Engineers; the American Society of Civil Engineers; the American Society for Engineering Education; the American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc.; the American Society of Mechanical Engineers; the Institute of Electrical and Electronics Engineers, Inc.; the National Council of Engineering Examiners; the National Society of Professional Engineers; the Society of Automotive Engineers; National Institute of Ceramic Engineers; and the Society of Manufacturing Engineers. Member bodies are the American Academy of Environmental Engineers, and the American Society for Metals.

The Aircraft Maintenance Program at Kansas Technical Institute is certified as an "Aviation Maintenance Technician School No. 3344" by the Federal Aviation Administration.

PROGRAM OPTIONS

A variety of program alternatives can be obtained to suit the

specific interest of the student. A student entering Kansas Tech may consult with the faculty in the subject area of his special interest. A specific program of study will be selected for the student at the earliest possible time to insure that the student progresses toward a degree objective with the least delay.

MATHEMATICS TRANSITION PROGRAM

A large number of men and women have the interest in and capabilities for a satisfactory career as an engineering technician. For various reasons many of these persons have not considered such a career during their high school experience. Frequently, new students have not completed the mathematics courses that would be most helpful to them in pursuing work in this career field.

The faculty at Kansas Technical Institute has developed a transition program in mathematics to assist those who have, for some reason, recognized that their mathematics ability is less than adequate.

A combination of basic mathematics applications courses and laboratory exercises assist in developing mathematical competence in students who have only fundamental working ability in math. Students entering Kansas Technical Institute will be offered a Mathematics Placement examination and will be given, if desired, the special help needed to insure that they develop competence in mathematics. This will allow them to be successful in the mathematics sequence in the technology of their choosing. If a competency in math is exhibited they may move directly into the prescribed mathematics sequence without having to participate in the Mathematics Transition Program.

ENGLISH AND READING PROFICIENCY PROGRAMS

Like the Mathematics Transition Program, the English and Reading Proficiency Programs are designed to aid students whose level of competency in these areas may be below the normal college level.

Proficiency examinations can be administered to help identify those students who need developmental work in English and reading. The students may then enroll in Developmental English and/or Developmental Reading to prepare them for the more advanced work they will encounter. These developmental courses may be taken concurrently with other communication and technical courses.

Key to Identification of Course Descriptions and Major Programs of Study

Course descriptions and majors are listed alphabetically by curricular codes as follows:

- AM—Aviation Maintenance
- AT—Aeronautical Technology
- CH—Chemical Engineering Technology
- CL—Civil Engineering Technology
- CP—Computer Science Technology
- CT—Computer Engineering Technology
- DP—Electronic Data Processing Technology
- ET—Electronic Engineering Technology
- GT—General Technology
- MM—Aviation Maintenance Management
- MT—Mechanical Engineering Technology
- SO—Solar Energy Utilization Technology
- SP—Special
- SV—Surveying Technology
- UN—Undeclared

The format of the course numbers is the curricular code plus a four digit number. The digits are explained in the following example:

GT1124

- GT—Curricular Code
- 1—Course Level by Year
- 1—Department Use Code
- 2—Earliest possible semester course can be taken
- 4—Total Semester credit

Parentheses at the end of a course description indicate the amount of recitation, laboratory, and semester credits for that course. The GT1124 example has (3-1-4) which means there are three (3) semester credits of recitation, one (1) semester credit of laboratory, and a four (4) semester credit course total.

Information following the semester credit block indicates *prerequisites* or *concurrency*, where they may exist. The prerequisite courses must be taken before the course being described may be taken. Concurrency means that the course may be taken at the same time as the course being described.

EXAMPLE: GT1224 has prerequisites of GT1212 and GT1213 which means that before taking GT1224 (Analytic Geometry and Calculus) the student must have completed GT 1212 (Plane Trigonometry) and GT1213 (College Algebra).

EXAMPLE: CL1124 has concurrent course GT1212 meaning that CL1124 (Plane Surveying) may be taken at the same time as GT1212 (Plane Trigonometry).



AERONAUTICAL TECHNOLOGY

AERONAUTICAL TECHNOLOGY

Career opportunities have expanded in the aviation industry in recent years. The programs available at Kansas Technical Institute provide high quality preparation for a variety of entry level positions in the aviation and related fields.

AVIATION MAINTENANCE Certificate Program

This two-year program prepares students for the FAA Airframe and Powerplant Certificates. The aircraft maintenance program is fully certified as an "Aviation Maintenance Technician School No. 3344" as designated in Federal Aviation Regulation Part 147. A student who satisfactorily completes this two-year aviation maintenance program will be awarded a Certificate of Completion which will be recognized by the FAA as a document authorizing the graduate to take the federally administered airframe and powerplant (A&P) written and oral examinations. Upon passing the exams, the graduate will be a licensed, government-certified Airframe and Powerplant maintenance technician.

Airframe and powerplant mechanics inspect, repair, modify, and maintain aircraft for manufacturers, commercial airlines, corporations, and field based operators.

Airframe, Powerplant Curriculum (AM)

First Year—Fall Semester

<i>Course No.</i>	<i>Course Name</i>	<i>Hours*</i>		<i>Semester Credits</i>
		<i>R</i>	<i>L</i>	
GT 1253	Elementary Functions	2	1	3
AM 1212	Aircraft Drawings	0	2	2
AM 1214	Aircraft Science	3	1	4
AM 1213	Aircraft Standards	2	1	3
ET 1513	Basic Electricity	2	1	3
AM 1111	Aircraft Basic Electricity Applications	0	1	1
Total Credits				16

First Year—Spring Semester

<i>Course No.</i>	<i>Course Name</i>	<i>Hours*</i>		<i>Semester Credits</i>
		<i>R</i>	<i>L</i>	
AM 1113	Aircraft Welding	2	1	3
AM 1324	Airframe Systems	2	2	4
AM 1325	Airframe Structures and Repair	3	2	5
AM 1323	Aircraft Fluid Power	2	1	3
AM 1723	Airframe/Powerplant Electrical Systems	1	2	3
Total Credits				18

Second Year—Fall Semester

AM 2423	Navigation Aids and Communications Systems	2	1	3
AM 2335	Inspection and Assembly	3	2	5
AM 2333	Aircraft Wood and Fabric	1	2	3
AM 2534	Powerplant Fundamentals	3	1	4
AM 2533	Powerplant Ignition Systems	2	1	3
Total Credits				18

Second Year—Spring Semester

AM 2643	Powerplant Induction and Fuel Systems . . .	2	1	3
AM 2542	Propellers	1	1	2
AM 2543	Powerplant Operation and Troubleshooting	1	2	3
AM 2644	Powerplant Overhaul	1	3	4
AM 2544	Gas Turbine Powerplants	2	2	4
Total Credits				16
Total semester credits required to complete certificate requirements				68

R—recitation or lecture credit; L—laboratory credit.
 ° Students should expect to spend 2 hours of study for each hour of class.

HELICOPTER MAINTENANCE Certificate Program

Helicopter Maintenance is designed to prepare students to service, troubleshoot, and repair components on the Hughes, Bell, and Hiller helicopters. The program is set up to be completed in two summers of study. You must have an A & P license, have completed a certified A & P program of study or have the consent of the instructor to enroll in Helicopter Maintenance.

With the rapid increase in the number of helicopters in public and private use, there is a strong demand for aircraft mechanics specially trained for helicopter inspection and maintenance.

Helicopter Maintenance Curriculum

First Year—Summer Session

Course No.	Course Name	Hours*		Semester Credits
		R	L	
AM 2353	Helicopter Rotor Systems	1	2	3
AM 2553	Helicopter Rotor Drive Systems	1	2	3
Total Credits				6

Second Year—Summer Session

AM 2753	Helicopter Flight Controls	1	2	3
AM 2853	Helicopter Structures and Powerplants . . .	1	2	3
Total Credits				6

Total semester credits to complete helicopter maintenance certificate program 12

AERONAUTICAL TECHNOLOGY

Associate Degree Program

The two-year degree program in Aeronautical Engineering Technology prepares graduates for careers as engineering technicians in aviation and related fields. A firm foundation in math, physics, and communications is combined with technical course work in design, development, testing, and analysis of aircraft systems. Students will become familiar with the materials and processes of aircraft design and production through classroom and laboratory

work. Graduates of this degree program may be employed in a variety of positions in research, development, design, quality control, testing or production of aircraft systems and components.

Aeronautical Technology (AT)

First Year-Fall Semester

<i>Course No.</i>	<i>Course Name</i>	<i>Hours</i>		<i>Semester Credits</i>
		<i>R</i>	<i>L</i>	
GT 1213	College Algebra	3	0	3
GT 1212	Plane Trigonometry	2	0	2
CP 1212	Introduction to Computer Techniques	1	1	2
AM 1213	Aircraft Standards	2	1	3
AM 1214	Aircraft Science	3	1	4
MT 1112	Technical Drafting	0	2	2
MT 1111	Descriptive Geometry	0	1	1

Total Credits 17

First Year-Spring Semester

GT 1224	Analytical Geometry and Calculus	4	0	4
GT 1124	Technical Physics I	3	1	4
AT 1423	Aerodynamic Theory	2	1	3
MT 1722	Thermodynamics I	2	0	2
GT 1713	Written Communications	3	0	3

Total Credits 16

Second Year—Fall Semester

GT 2222	Differential Equations	2	0	2
CL 2432	Statics	2	0	2
ET 1513	Basic Electricity	2	1	3
MT 2533	Fluid Mechanics	2	1	3
AT 2433	Experimental Methods of Aerodynamics	0	3	3
GT 1312	Oral Communications	2	0	2
GT 1222	Logic	2	0	2

Total Credits 17

Second Year—Spring Semester

AT 2744	Systems Dynamics	3	1	4
AT 2743	Dynamics	3	0	3
CP 2233	Statistics with Computer Applications	2	1	3
GT 2713	Technical Writing	3	0	3
	Business/Social Science Elective	-	-	4

Total Credits 17

Total semester credits required for the Associate of Technology Degree 67

AERONAUTICAL COURSE DESCRIPTIONS

AM 1111 Aircraft Basic Electricity Applications

This course is designed to extend the direct and alternating current concepts learned in ET 1513 by applying them to specific examples of aircraft electrical systems and components. (0-1-1)

Concurrent: ET 1513

AM 1113 Aircraft Welding

Theory and skill development in aircraft welding processes.

Exercises in gas welding processes as applied to ferrous and nonferrous materials. Inert gas atomic hydrogen, and resistance welding processes are to be studied. Additional studies will be made in the following areas: welding magnesium, welding stainless steels, brazing, soldering, silver soldering. Some arc welding fundamentals will also be covered. (2-1-3) Prerequisite: None

AM 1212 Aircraft Drawings

The course is designed to teach the student how to recognize and identify each kind of line as it appears in drawings, to interpret the meaning of the lines as they relate to surfaces and details in drawings. The student will make drawings illustrating major repairs or alterations, and study the reading and interpretation of blueprints. (0-2-2) Prerequisite: None

AM 1213 Aircraft Standards

A survey of the organization of the Federal Aviation Administration and the Civil Aeronautics board. Emphasis will be placed on the regulations, standards, and specifications of each of these organizations. A detailed study of weight and balance procedures will be conducted in the classroom and in the laboratory. (2-1-3) Prerequisite: None

AM 1214 Aircraft Science

A survey of aircraft nomenclature, theory of flight and aerodynamics, aircraft ground operation and servicing, and aircraft materials and processes. (3-1-4) Prerequisite: None

AM 1323 Aircraft Fluid Power

A study of basic fluid mechanics as it applies to practical applications in aircraft systems. Compressible and incompressible fluid systems will be studied. (2-1-3) Prerequisites: AM 1214, GT 1253

AM 1324 Airframe Systems

A study of the airframe systems and components common to various types of general aviation aircraft. (2-2-4) Prerequisite: AM 1214

AM 1325 Airframe Structures and Repair

A study of materials commonly used in airframe structures and the associated study of making structural repairs according to recommended procedures. Skills in sheetmetal are stressed. (3-2-5) Prerequisite: AM 1214

AM 1723 Airframe/Powerplant Electrical Systems

An advanced study of DC/AC circuits' law relating to circuit analysis and a detailed study of measuring instruments. Advanced study of relays, switches, and other devices encountered in circuit analysis, troubleshooting and repair. Also includes a

detailed study of electrical components and systems used in a variety of aircraft active in general aviation. Attention will be devoted to low voltage electrical components of airframe electrical systems. (1-2-3) Prerequisite: ET 1513, AM 1111

AM 2333 Aircraft Wood and Fabric

A course designed to acquaint the student with the various fabric coverings used on aircraft and methods used in application of finishes to aircraft surfaces, also includes a study of materials commonly used in airframe structures and the associated study of making structural repairs according to recommended procedures. Skills in woodworking are stressed. (1-2-3) Prerequisite: None

AM 2335 Aircraft Inspection and Assembly

A study of the assembly, assembly procedures, manufacturing procedures, and inspection of aircraft components. This course also covers in detail the inspections required in aircraft maintenance, aircraft alterations and inspections governing the issuance of airworthiness certificates, either under the manufacturers type certificate or a supplemental type certificate. (3-2-5) Prerequisites: GT 1253, AM 1212, AM 1214, AM 1213, AM 1111, ET 1513

AM 2423 Navigational Aids and Communications Systems

A survey study of the aids to navigation and communications used in light and intermediate class aircraft. Operation and installation of the various types of equipment will be stressed. (2-1-3) Prerequisite: ET 1513, AM 1111

AM 2533 Powerplant Ignition Systems

A study of battery, magneto high and low tension ignition systems for today's aircraft. Emphasis will be placed on troubleshooting, repair, and timing of aircraft ignition systems. (2-1-3) Prerequisite: ET 1513, AM 1111; Concurrent: AM 2534

AM 2534 Powerplant Fundamentals

A study of the principles of operation, design features and operating characteristics of reciprocating aircraft engines. Includes the study of radial, in-line and horizontal opposed engines. (3-1-4) Prerequisite: None

AM 2542 Propellers

A study of the use, maintenance, and inspection of propellers, and their related control systems. (1-1-2) Concurrent: AM 2534

AM 2543 Powerplant Operation and Troubleshooting

Experience in installation, operation, and removal of reciprocating engines. Engine analysis and diagnosis of malfunctions, including methods of remedy are items that are fundamental to the operation phase of this course. (1-2-3) Prerequisite: AM 2534

AM 2544 Gas Turbine Powerplant

Advanced study of the fundamentals of gas turbine powerplants including principles of operation, studies of supporting systems, and methods of inspection are fundamentals of this course. (2-2-4) Prerequisite: AM 2534

AM 2643 Powerplant Induction and Fuel Systems

A study of aircraft induction and fuel metering systems including fuels, carburetors, fuel injection systems, superchargers and other induction system components used to insure a dependable and accurate fuel supply at any flight configuration and attitude. (2-1-3) Concurrent: AM 2534

AM 2644 Powerplant Overhaul

Practical experience in overhauling reciprocating engines. Some experience will be gained on radial engines; however, emphasis will be placed on small opposed engines of a current popular variety. Attention will be devoted to various inspection methods, allowable tolerances, replacement procedures, and assembly. (1-3-4) Prerequisite: AM 2534

AM 2353 Helicopter Rotor Systems

A study of aerodynamic effects on different type rotor systems. Includes a detailed study of required maintenance, historical records, and inspection procedures on rotor components. Attention will be directed to safety, sound maintenance practices when working on rotor systems. (1-2-3) Prerequisite: AF/PP License or consent of Instructor

AM 2553 Helicopter Rotor Drive Systems

A study of the construction, inspection procedures, and overhaul of various transmissions installed on helicopters. Included will be a detail study of clutches and drive shafting. Attention will be directed to use of appropriate manuals and tools, and sound maintenance practices. (1-2-3) Prerequisite: AF/PP License or consent of Instructor

AM 2753 Helicopter Flight Controls

A study of Airframe flight control installation and rigging. Included will be a detailed study of control cables, hydraulically boosted flight controls, and electrically actuated hydraulically boosted flight controls; plus, auxiliary flight stabilization. (1-2-3) Prerequisite: AF/PP License or consent of Instructor

AM 2853 Helicopter Structures and Powerplants

A detailed study of the airframe structure, external stores mounting, landing gear and external sling. Included will be a detailed study of powerplant installation, inspection and maintenance with emphasis on safety and sound maintenance practices. (1-2-3) Prerequisite: AF/PP License or consent of Instructor

AM 2930 Problems in Aeronautical

A course in which advanced study is done in a specific area chosen by the instructor. (1 to 6) Prerequisite: Instructor's consent

AT 1423 Aerodynamic Theory

A study of the principles of aerodynamics and their applications. Through extensive problem solving, such concepts as two and three dimensional airfoil theory, drag, and aircraft performance will be emphasized. (2-1-3) Prerequisite: GT 1224 or concurrent

AT 2433 Experimental Methods In Aerodynamics

A study of experimental methods in aerodynamics. Included are test planning, model design, instrumentation, data collection and analysis. Use will be made of wind tunnel and limited flight data. (0-3-3) Prerequisite: AT 1423

AT 2743 Dynamics

A study of the laws of motion and their applications to the solution of problems in aerodynamics as well as other systems. (3-0-3) Prerequisite: CL 2432

AT 2744 Systems Dynamics

A study of the similarities between fluid systems, mechanical systems, and electrical systems. The student will use math modeling and subsequently analog and digital computer programs to solve problems in each of the system. (3-1-4) Prerequisite: GT 2222, ET 1513



**CIVIL ENGINEERING
TECHNOLOGY**

CIVIL ENGINEERING TECHNOLOGY

As a result of the information explosion and the use of micro-electronics and computers, the field of Civil Engineering Technology has required better trained technicians to act as communicators between the graduate engineer and the craftsperson in production and construction.

The Civil Engineering Technician is required to stay current with these advances and must acquire the knowledge not only of current procedures and equipment, but also a knowledge of source of information from current technical publications. The technician is equipped and prepared with knowledge of construction, materials sampling and testing, construction equipment and practice, principles of surveying, structural design and fabrication, transportation systems as well as a foundation in mathematics, physical science, communications, and personnel relations.

Career Options and Employment

A Civil Engineering Technician performs functions in the area of control and layout of horizontal and vertical elevations for proposed construction of buildings, bridges, and transportation facilities. This would include preliminary and final surveys, assisting in design and detailing stage, or supervision of construction to maintain quality control.

Some job titles or positions that could be filled by a graduate are: designer, project inspector, detail draftsman, construction supervisor, materials technician, technical representative, testing lab technician, surveyor trainer, engineering aide, field engineer, and utility network services supervisor.

Civil Engineering Technology

The program will equip and prepare the civil technician for employment in industries dealing with the design and construction of highways, bridges, railroads, airports, water supply and distribution projects, and other projects ranging from small scale construction jobs to those involving tremendous capital expenditures. Civil Engineering Technicians have varied employment opportunities in each of these areas.

Civil Engineering Technology Curriculum (CL)

This curriculum is accredited by the Accreditation Board for Engineering and Technology (ABET).

First Year—Fall Semester

Course No.	Course Name	Hours*		Semester Credits
		R	L	
GT 1213	College Algebra	3	0	3
GT 1212	Plane Trigonometry	2	0	2
CL 1312	Materials Sampling and Testing	0	2	2
MT 1112	Technical Drafting	0	2	2
GT 1713	Written Communications	3	0	3
CP 1212	Introduction to Computer Techniques	1	1	2
	‡Business/Social Science Elective			2
Total Credits				16

First Year—Spring Semester

GT 1124	Technical Physics I	3	1	4
GT 1224	Analytic Geometry and Calculus	4	0	4
CL 1124	Plane Surveying	2	2	4
CL 1222	Civil Technology Drafting	0	2	2
GT 2713	Technical Writing	3	0	3
Total Credits				17

Second Year—Fall Semester

CL 2435	Statics and Strength of Materials	5	0	5
MT 2533	Fluid Mechanics	2	1	3
CL 2134	Route and Construction Surveying	2	2	4
CL 2322	Soils and Foundations	1	1	2
CL 2532	Construction Methods and Estimating	1	1	2
Total Credits				16

Second Year—Spring Semester

GT 1312	Oral Communication	2	0	2
CL 2445	Structural Design	3	2	5
CL 2444	Transportation Systems	2	2	4
†GT 1114	Applied Chemistry I			
	OR			
GT 2334	Technical Physics II	3	1	4
	Business/Social Science Elective			3
Total Credits				18

Total semester credits required for Associate of Technology Degree 67

* R—recitation or lecture credit; L—laboratory credit.
 * Students should expect to spend 2 hours of study for each hour of class.
 † May be interchanged with proper mathematic background.

SURVEYING TECHNOLOGY

From as early as 1400 B.C. man has found it necessary to determine property boundaries and to divide areas of land into smaller sections. Over the years the use of surveying has expanded until today it is impossible to imagine any land transaction or construction project that does not make use of some type of survey.

Surveys are necessary for the planning, design and layout of all major engineering projects. Surveys are used for subdivisions, buildings, bridges, railroads, highways, airports, canals, dams,

irrigation and drainage projects and in the preparation of any type of map. A surveyor must be able to think logically, to plan and to take pride in his work. He must be able to work, and make a neat and orderly record of, his measurements and calculations.

The tremendous amount of physical development in our country has created a need for qualified surveyors at a faster rate than our schools have been able to produce them. Graduates of the Surveying Technology option will be able to find employment in the areas of construction, as governmental surveyors (federal, state, county and municipal) and in the fields of engineering consulting and private surveying.

It's important to note that any person who goes into private practice must be licensed. This program combined with the necessary work experience will help the individual qualify to take the Surveying Examination.

Surveying Technology Curriculum (SV)

First Year—Fall Semester

Course No.	Course Name	Hours ^o		Semester Credits
		R	L	
GT 1213	College Algebra	3	0	3
GT 1212	Plane Trigonometry	2	0	2
MT 1112	Technical Drafting	0	2	2
GT 1713	Written Communications	3	0	3
CP 1212	Introduction to Computer Techniques . . .	1	1	2
GT 1312	Oral Communications	2	0	2
	Civil Elective **			2
Total Credits				16

First Year—Spring Semester

CL 1222	Civil Technology Drafting	0	2	2
GT 1124	Technical Physics I	3	1	4
GT 1224	Analytic Geometry and Calculus	4	0	4
CL 1124	Plane Surveying	2	2	4
CL 1123	Land Surveys	2	1	3
Total Credits				17

Second Year—Fall Semester

CL 2435	Statics and Strength of Materials	5	0	5
CL 2134	Route and Construction Surveying	2	2	4
CL 2133	Surveying Astronomy	2	1	3
GT 2713	Technical Writing	3	0	3
	Business/Social Science Elective			2
Total Credits				17

Second Year—Spring Semester

CL 2444	Transportation Systems	2	2	4
CL 2143	Surveying Law	3	0	3
GT 1114	Applied Chemistry I			
OR				
GT 2334	Technical Physics II	3	1	4
	Business/Social Science Elective			3
	Civil Elective **			3
Total Credits				17

R—recitation or lecture credit; L—laboratory credit.

° Students should expect to spend 2 hours of study for each class.

°° Civil Electives—minimum of 5 credits from the following courses: CL 1312, CL 1322, MT 1111, CL 1122, CL 2534, CL 2142.

CIVIL COURSE DESCRIPTIONS

CL 1122 Construction Surveying

A study of the vertical and horizontal alignment required and methods of establishing and maintaining control on a construction site. Emphasis is placed on practical methods and problems encountered in active construction. (1-1-2) Prerequisite: GT 1224

CL 1123 Land Surveys

A course dealing with the procedures for researching records, conducting surveys, formulating descriptions, and producing plats which relate to the surveying of land. (2-1-3) Prerequisite or concurrent: CL 1124

CL 1124 Plane Surveying

This is a course in the theory and practice of obtaining field measurements for surveying. Emphasis is placed on accuracy and how to avoid or minimize errors and mistakes. (2-2-4) Prerequisite or concurrent: GT 1212

CL 1222 Civil Technology Drafting

This course consists of making and studying the various types of drawings and maps common to Civil Technology: Ownership plats, plan profile, contour maps, certification. Photogrammetry procedures are studied and structural detail drawings are examined. (0-2-2) Prerequisite: MT 1112

CL 1312 Materials Sampling and Testing

A study of aggregates and concreting materials as used in asphalt and portland cement construction. The course includes sampling techniques and methods of testing which conform to American Society of Testing Materials and the American Association of State Highway and Transportation Officials. Mix designs are emphasized both in the laboratory and field use. The course concluded with elements of asphalt testing. (0-2-2) Prerequisites: None

CL 1322 Soils and Foundations

This course covers the criteria used in the selection, design and construction of the elements of a structure that transfers its total load to the underlying formation. Physical characteristics of compacted and uncompacted soils, soil bearing qualities and an

insight into the design for footings, walls, piers and piling used for foundation purposes. (1-1-2) Prerequisite: GT 1224

CL 2133 Surveying Astronomy

A study of spherical trigonometry and its application to astronomical calculations that will be used in the determination of bearing, azimuth, latitude, longitude and time from solar, polar, and stellar observations. (2-1-3) Prerequisite: CL 1124

CL 2134 Route and Construction Surveying

A study of the geometry involved in vertical and horizontal alignment of roads and streets. The effects of the alignment on grades, design speed and sight distance are considered. In the laboratory the knowledge is used to perform the staking necessary for preliminary studies as well as construction. (2-2-4) Prerequisite: CL 1124

CL 2142 Advanced Surveying

A study of the advanced areas of surveying with primary emphasis on control networks, state plane systems, tachemoetry, geodetic surveying and the use of electronic surveying equipment. (1-1-2) Prerequisite: CL 1123

CL 2143 Surveying Law

A study of the legal aspects that apply to the surveying profession, and the role of the surveyor within the judicial frame work of our court system. (3-0-3) Prerequisite: CL 1123

CL 2432 Statics

A study of forces and their effects on the bodies upon which they act. (2-0-2) Prerequisites: GT 1124

CL 2435 Statics and Strength of Materials

A study of forces, stresses, structures, and design characteristics of a variety of engineering components. (5-0-5) Prerequisite: GT 1124

CL 2443 Strength of Materials

A study of the internal resistance to external forces. The course also deals with the resulting changes in the dimensions and shapes of bodies produced by outside forces. (3-0-3) Prerequisites: CL 2432

CL 2444 Transportation Systems

A study of the design of transportation systems with emphasis on highways, urban roadways, railroads and airports. General topics

included are roadway alignment, drainage structures and pavements. (2-2-4) Prerequisite: CL 2134

CL 2445 Structural Design

A course combining the design of structures in reinforced concrete and structural steel. Basic stress calculations and design concepts are studied for use in either a design or inspection role. (3-2-5) Prerequisite: CL 2435

CL 2743 Structural Steel Design

A course covering the basic fundamentals of structural steel design. Stress calculations and design concepts are studied for use in either a design or inspection role. (2-1-3) Prerequisites: CL 2435

CL 2753 Reinforced Concrete Design

A course covering the basic fundamentals of reinforced concrete design. Stress calculations and design concepts are studied for use in either a design or inspection role. (2-1-3) Prerequisites: CL 2435

CL 2532 Construction Methods and Estimating

A study of the basic equipment needs, usage, costs, and quantity determinations for planning and estimating construction projects. Field trips through construction sites and visitation with the inspectors assist in developing reporting procedures and inspection responsibilities. (1-1-2) Prerequisite: None

CL 2930 Problems in Civil

A course in which advanced study is done in a specific area chosen by the student. (1 to 6) Prerequisite: Instructor's consent



**ELECTRONICS ENGINEERING
TECHNOLOGY**

ELECTRONIC ENGINEERING TECHNOLOGY

Beginning with the 'cat's whisker' crystal radios of the 1920's, electronics has become an important field of study where uses have expanded into every major industry and affects the daily lives of every citizen of our country.

Advances in electronics have resulted in the creation of entirely new industries and accelerated the growth of other segments of our economy.

Applications in medicine, geology, public safety, aeronautics, law enforcement, automation, home entertainment and computer science have only scratched the surface of the potential uses for electronics. Because of rapid growth, individuals choosing electronics as a career field have many opportunities for advancement in a challenging endeavor.

The many facets of electronics have produced a need for technicians to perform a variety of jobs world-wide.

Technical education in the field of electronics includes study in mathematics and basic sciences, electrical circuits, transistors and integrated circuit theory, electronic measurements, communications and computer circuits.

These subjects along with courses in technical writing, business and management provide the student with the fundamentals needed for a variety of responsible positions throughout the electronics industry.

Laboratory activities provide 'hands on' experience with equipment similar to that found in industry.

Precision oscilloscopes, function generators, frequency counters and power supplies are among the equipment routinely used by electronics students.

Optional courses in Electronics Communications are available for those desiring a more intensive preparation in this area.

Electronic Engineering Technology Curriculum (ET)

This curriculum is accredited by the Accreditation Board for Engineering and Technology (ABET)

First Year—Fall Semester

Course No.	Course Name	Hours*		Semester Credits
		R	L	
GT 1713	Written Communications	3	0	3
MT 1112	Technical Drafting	0	2	2
GT 1213	College Algebra	3	0	3
GT 1212	Plane Trigonometry	2	0	2
CP 1212	Introduction to Computer Techniques . . .	1	1	2
ET 1113	Direct Current Circuits	2	1	3
GT 1312	Oral Communications	2	0	2
Total Credits				17

First Year—Spring Semester

GT 1124	Technical Physics I	3	1	4
GT 1224	Analytic Geometry and Calculus	4	0	4
ET 1224	Alternating Current Circuits	2	2	4
ET 1324	Applied Electronics I	2	2	4

Total Credits 16

Second Year—Fall Semester

ET 2434	Electronic Measurements	2	2	
	OR			
ET 2634	Communication Circuits I	3	1	4
ET 2535	Applied Electronics II	3	2	5
ET 2631	Electronic Seminar I	0	1	1
ET 2743	Digital Electronics	2	1	3
GT 2713	Technical Writing	3	0	3

Total Credits 16

Second Year—Spring Semester

ET 2944	Applied Electronics III	3	1	
	OR			
ET 2644	Communication Circuits II	2	2	4
ET 2041	Electronic Seminar II	0	1	1
ET 2843	Solid State Applications	2	1	3
GT 1114	Applied Chemistry I			
	OR			
GT 2334	Technical Physics II	3	1	4
	Business/Social Science Electives	5	0	5

Total Credits 17

Total Semester Credits required for Associate of Technology Degree 66

R—recitation or lecture credit; L—laboratory credit.

* Students should expect to spend 2 hours of study for each hour of class.

COMPUTER ENGINEERING TECHNOLOGY

New advances in electronics including the remarkable micro-processor—an actual computer smaller than a postage stamp—have created a need for skilled individuals capable of working with this new technology. The Computer Engineering Technology program at KTI offers training in these computer electronics areas.

The Computer Engineering Technician must understand not only the electronic or “hardware” aspect of the computer, but also the programming or “software” aspects as well. By understanding both hardware and software, the computer engineering technician can be employable in one of many different areas including computer hardware design, computer maintenance, industrial process control, and computer manufacturing and testing.

The Computer Engineering Technician will often work closely with computer engineers, electrical engineers, and computer scientists to assist in the design and development of computers and computer-based products. Job responsibilities might include de-

sign assistance, prototype construction, system testing and computer programming tasks.

Training in the Computer Engineering Technology curriculum includes a solid foundation in mathematics and science. Courses in electronics and fundamental computer programming areas form the basis for the advanced courses in digital system design and microprocessor applications.

Computer Engineering Technology Curriculum (CT)

First Year—Fall Semester

Course No.	Course Name	Hours*		Semester Credits
		R	L	
ET 1113	D. C. Circuits	2	1	3
GT 1213	College Algebra	3	0	3
GT 1212	Plane Trigonometry	2	0	2
GT 1713	Written Communications	3	0	3
CP 1313	Computer Systems Principles	3	0	3
CP 1132	BASIC	1	1	2
Total Credits				16

First Year—Spring Semester

ET 1224	A. C. Circuits	2	2	4
ET 1324	Applied Electronics I	2	2	4
GT 1222	Analytic Geometry and Calculus	4	0	4
GT 1312	Oral Communications	2	0	2
CP 1223	Introduction to Microprocessors	2	1	3
Total Credits				17

Second Year—Fall Semester

ET 2434	Electronic Measurements	2	2	4
GT 1124	Technical Physics I	3	1	4
CT 2144	Digital System Design	2	2	4
CP 2433	Assembly Language Programming	2	1	3
GT 1113	Business/Social Science Elective			2
Total Credits				17

Second Year—Spring Semester

GT 1114	Applied Chemistry I			
	OR			
GT 2334	Technical Physics II	3	1	4
CT 2244	Computer Engineering Technology Seminar	2	2	4
GT 2713	Technical Writing	3	0	3
MT 1112	Technical Drafting	0	2	2
	Business/Social Science Elective			3
Total Credits				16

Total semester credits required for Associate or Technology Degree 66

R—recitation or lecture credit; L—laboratory credit.

* Students should expect to spend 2 hours of study for each hour of class.

ELECTRONIC COURSE DESCRIPTIONS

ET 1113 Direct Current Circuits

A beginning course in basic circuit theory. Concepts of voltage, current, resistance, and inductance are applied to various electric circuits to analyze their behavior. Covers electrical sources, ohms law, power, resistance, series and parallel circuits. Attention is paid to the application of Thevenin's and Norton's Theorems, loop and nodial circuit analysis. Includes capacitive and inductive time constant circuits. Laboratory exercises emphasize the use of basic measuring instruments, as well as the characteristics of passive circuits and components. (2-1-3) Prerequisite: Concurrent with GT 1213

ET 1224 Alternating Current Circuits

A study of Alternating Current circuits. Includes an analysis of the sine wave, polar and rectangular algebra, inductive and capacitive reactance, impedance networks, power factor correction, resonant circuits, and transformer theory. Also includes an introduction to three phase power distribution. Laboratory exercises reinforce key concepts. (2-2-4) Prerequisites: ET 1113 and concurrent with GT 1212

ET 1324 Applied Electronics I

A survey of the family of active electronic devices. Analysis includes both graphic and mathematical models. Includes basic semiconductor theory, junction diodes, and transistors. Also includes field effect transistors, Zener diodes, optoelectronic devices, silicon controlled rectifiers, unijunction transistors and others. Laboratory periods are devoted to the measurement of device characteristics in basic circuit configurations. (2-2-4) Prerequisite: ET 1113

ET 1513 Basic Electricity

A survey course designed to provide the non-electronics major with an overview of basic Direct Current and Alternating Current Circuits. Topics of study include ohms law, series and parallel alternating current and direct current circuits, magnetism, capacitance, inductance, the use of polar and rectangular notation, AC power, resonance, and transformers. Laboratory exercises reinforce circuit theory and provide skills in the use of common electrical instruments. (2-1-3) Prerequisite: Concurrent with GT 1253 or equivalent coursework

ET 2434 Electronic Measurements

A study of theory and operation of basic electronic instruments. Includes DC and AC ammeters, voltmeters, impedance bridges, attenuators, filters, etc. Also includes a study of amplifiers as related to sensitive AC electronic voltmeters, sensitive DC elec-

tronic voltmeters, oscilloscopes, etc. Includes an introduction to digital instrumentation along with characteristics of various transducers and sensors. Laboratory exercises provide experience in the selection of proper equipment for making measurements in electrical and electronic systems as well as interpretation of these measurements. (2-2-4) Prerequisites: ET 1224 and ET 1324

ET 2535 Applied Electronics II

The application of electron devices to amplifiers. Emphasis is placed on analysis and design of RC-coupled, transformer coupled and direct coupled amplifiers. Load line analysis, equivalent circuit analysis and frequency response are studied. Principles of bias stabilization and characteristics of feedback circuits are included. Operational amplifiers and their applications are introduced. The family of feedback oscillators, tuned circuit coupling and power amplifiers are covered. Laboratory exercises emphasize principles of circuit operation. (3-2-5) Prerequisites: ET 1224 and ET 1324

ET 2631 Electronic Seminar I

An industry related course to prepare the student for his first position. The student designs an electronic circuit to a set of specifications. Includes techniques of electronic chassis construction and printed circuit board techniques. A report is prepared describing the circuits, applications and testing methods. (0-1-1) Prerequisites: ET 1224 and ET 1324

ET 2041 Electronics Seminar II

The report developed for ET 2631 is used by the student to develop the Electronic hardware to a finished model. The model is tested to the original specifications. A report is prepared showing test results, design changes, and instructions on the use of the equipment. (0-1-1) Prerequisite: ET 2631

ET 2634 Communications Circuits I

A study of the behaviour of electromagnetic waves, transmission lines, and antennas. Particular emphasis is placed upon the use of the Smith chart. (3-1-4) Prerequisite: ET 1224, ET 1324

ET 2644 Communications Circuits II

The study of modulation systems, transmitters, and receivers. Emphasis placed on circuit design and optimization. (2-2-4) Prerequisite: ET 2634

ET 2743 Digital Electronics

An overview of basic logic circuit theory. Includes binary, octal, and hexadecimal arithmetic. Also, binary codes, boolean algebra, DeMorgan's theorems and equation simplification. Gating circuits, multivibrator circuits, converters, counters, shift registers, and memory devices are dealt with. Laboratory exercises demon-

strate concepts, through hands-on experience with integrated circuit transistor logic. (2-1-3) Prerequisite: ET 1324

ET 2843 Solid State Applications

A study of advanced applications of solid state components. Includes various transistors, thyristors and integrated circuits including those found in current literature. Microprocessor applications and interfacing are introduced. Laboratory exercises require application and analysis of circuits studied in the classroom. (2-1-3) Prerequisites: ET 2535, ET 2434, concurrent with ET 2743

ET 2944 Applied Electronics III

A survey of electronic communication techniques and systems. Includes amplitude modulation, frequency modulation, single-side band and pulse modulation techniques. Transmission line and antenna theory are included along with the effects of noise. The use of the Smith chart is emphasized. Laboratory work involves design and measurement along with field trips to representative sites. (3-1-4) Prerequisites: ET 2434, ET 2535

ET 2930 Problems in Electronics

A course in which advance study is done in a specific area chosen by the student. (1 to 6) Prerequisite: variable

CT 2144 Digital System Design

An extension of the material covered in CP 1223, Introduction to Microprocessors. Covers techniques of sequential logic, analog to digital and digital to analog conversion, display systems, and microprocessors as system elements, also use of microprocessors for control applications. Hardware/Software tradeoffs are discussed. Lab work includes system design, testing and troubleshooting using logic probes and the logic analyzer. (2-2-4) Prerequisites: CP 1223, ET 1324

CT 2244 Computer Engineering Technology Seminar

An industry-related course used to acquaint the student with industrial project design and development. Small-group research, design, and building of projects to implement computer-based tasks specified by instructor. Written reporting including hardware and software design implementation description, testing methods, test results, and design changes. (2-2-4) Prerequisites: ET 2434, CP 2144



**COMPUTER SCIENCE
TECHNOLOGY**

COMPUTER SCIENCE TECHNOLOGY

The technology of the digital computer is having far-reaching effects on nearly every aspect of our modern society. Advances in computer technology have made the use of computers a feasible reality for virtually all types of businesses and industries. This rapid growth in the computer industry has created a strong demand for workers with special training in the computer field.

The KTI Computer Technology Department offers programs leading to challenging careers in two areas: Computer Science Technology and Electronic Data Processing Technology. In addition, the department's course offerings are utilized by the other departments on campus, since computer usage has become a very important tool in nearly all areas of technology.

The Harris H/100 computer system gives all KTI students the opportunity to obtain experience with the programming and operation of a state-of-the-art computer comparable to systems used in business and industry. In addition, several microprocessor systems are available, as well as digital logic test equipment, for experimentation in computer hardware areas.

Computer Science Technology

The Computer Science Technology curriculum offers training in the use of computers for solution of scientific and engineering problems. Many industries including aircraft companies, energy companies, agricultural research organizations, as well as large computer manufacturers employ computer science technicians as computer programmers and programmer/analysts in these scientific areas.

The computer programmer works closely with the systems analyst who develops mathematical models of scientific and engineering problems for solution by the computer. The programmer helps define the problem, including input and output requirements, and prepares the actual set of instructions the computer must follow to solve the problem. As a programmer/analyst the computer science technician would do most of the mathematical formulation as well as the actual programming necessary to solve a problem. Programmer/analysts frequently work directly with scientists and engineers in developing solutions to problems.

Training in the Computer Science Technology curriculum includes a strong coverage of science and mathematics as well as courses in computer programming and advanced applications of computers in scientific areas.

Computer Science Technology Curriculum (CP)

This curriculum is accredited by the Accreditation Board for Engineering and Technology (ABET).

First Year—Fall Semester

Course No.	Course Name	Hours*		Semester Credits
		R	L	
GT 1213	College Algebra	3	0	3
GT 1212	Plane Trigonometry	2	0	2
GT 1713	Written Communications	3	0	3
GT 1312	Oral Communications	2	0	2
CP 1313	Computer Systems Principles	3	0	3
CP 1132	BASIC	1	1	2
Total Credits				15

First Year—Spring Semester

GT 1124	Technical Physics I	3	1	4
GT 1224	Analytic Geometry and Calculus	4	0	4
CP 1122	FORTRAN	1	1	2
CP 1223	Introduction to Microprocessors	2	1	3
GT 2713	Technical Writing	3	0	3
Total Credits				16

Second Year—Fall Semester

CP 1123	COBOL	2	1	3
CP 2233	Statistics with Computer Applications	2	1	3
CP 2133	Numerical Methods	2	1	3
GT 1423	Business/Social Science Electives			5
CP 2433	Assembly Language Programming	2	1	3
Total Credits				17

Second Year—Spring Semester

GT 1114	Applied Chemistry I			
	OR			
GT 2334	Technical Physics II	3	1	4
CP 2232	Computer Graphics	0	2	2
CP 2444	Analog Computer Methods with Applied Differential Equations	2	2	4
ET 1513	Basic Electricity	2	1	3
CP 2122	Pascal			
	OR			
CP 2222	RPG	1	1	2
CP 2143	Computer Systems Seminar	2	1	3
Total Credits				18

Total semester credits required for Associate or Technology Degree 66

R—recitation or lecture credit; L—laboratory credit.
* Students should expect to spend 2 hours of study for each hour of class.

Electronic Data Processing Technology

Applications of computers in the business world presently affect persons in all walks of life. Financial transactions including bank statements, credit card purchases, customer billing, payroll checks, and even grocery store cash registers are now computerized. The demand for skilled computer programmers and programmer/analysts in the business world continues to grow with each new application that arises.

The programmers and computer analysts in the Electronic Data Processing field apply knowledge of computer programming, accounting and management methods to the solution of business-oriented problems. Training in the Electronic Data Processing curriculum includes work in business-oriented computer languages and techniques, accounting, business law, and management. Fundamental mathematics and communications skills are included to enhance the individual's capabilities in the business world.

Electronic Data Processing Technology Curriculum (DP)
First Year—Fall Semester

<i>Course No.</i>	<i>Course Name</i>	<i>Hours*</i>		<i>Semester Credits</i>
		<i>R</i>	<i>L</i>	
GT 1513	Principles of Accounting I	3	0	3
GT 1253	Elementary Functions	2	1	3
GT 1312	Oral Communications	2	0	2
GT 1713	Written Communications	3	0	3
CP 1313	Computer Systems Principles	3	0	3
CP 1132	BASIC	1	1	2

Total Credits 16

First Year—Spring Semester

GT 1523	Principles of Accounting II	3	0	3
GT 1423	Introduction to Business	3	0	3
CP 1122	FORTRAN	1	1	2
CP 1223	Introduction to Microprocessors	2	1	3
	Technical/Business Elective			6

Total Credits 17

Second Year—Fall Semester

GT 2713	Technical Writing	3	0	3
GT 1412	Economics			
	OR			
GT 1472	Capital Investment Analysis	2	0	2
CP 1123	COBOL	2	1	3
CP 2433	Assembly Language Programming	2	1	3
CP 2233	Statistics with Computer Applications	2	1	3
	Technical/Business Elective			3

Total Credits 17

Second Year—Spring Semester

CP 2232	Computer Graphics	0	2	2
DP 2243	EDP Applications	1	2	3
CP 2143	Computer System Seminar	2	1	3
CP 2122	Pascal			
	OR			
CP 2222	RPG	1	1	2
GT 1413	Supervisory Management	3	0	3
	Technical/Business Elective			3

Total Credits 16

Total semester credits required for Associate of
Technology Degree 66

R—recitation or lecture credit; L—laboratory credit.

* Students should expect to spend 2 hours of study for each hour of class.

COMPUTER COURSE DESCRIPTIONS

CP 1212 Introduction to Computer Techniques

Study of computer techniques and applications for the non-Computer Technology majors. Emphasis on problem solving using the BASIC programming language. Scientific programming assignments in the student's major field of study are performed on the central on-campus computer system and on microcomputer systems. (1-1-2) Prerequisite: None

CP 1132 BASIC

Introduction to the BASIC programming language as an initial language will include novice through intermediate concepts. Logic design, structure and style will be stressed through coding assignments. Selected advanced topics will be covered and carry through to the next programming course (1-1-2) Prerequisite: None

CP 1123 COBOL

Study of computer language COBOL with emphasis on business applications. Includes coverage of file structures, file updating techniques, report generation, and processing of numeric and character data. Laboratory work includes solution of several business-related problems using COBOL. (2-1-3) Prerequisite: CP 1132

CP 1313 Computer System Principles

Introductory Study of how computers are used. History, representation, storage concepts, input/output devices, and data communications are covered as well as the programming task, system documentation, physical system design, and feasibility analysis. Specific computer systems that demonstrate underlying principles are studied. (3-0-3) Prerequisite: None

CP 1122 FORTRAN

Study of the computer language FORTRAN and its application to scientific and engineering problem solution. Includes study of input/output techniques, arithmetic and logic processes, non-numeric data handling, arrays and subprograms. In the laboratory students write, process, and debug scientific programs using the FORTRAN-77 compiler. (1-1-2) Prerequisite: CP 1132

CP 1223 Introduction to Microprocessors

The course is designed to introduce students to terminology, mathematics, and basic theory pertaining to microprocessors. Emphasis is placed on programming and software design via the 6502 instruction set. A weekly laboratory will furnish hands-on experience through use of 6502 single-board and microcomputers. (2-1-3) Prerequisite: CP 1313, CP 1132

CP 2122 Pascal

Introduction to the strongly typed, highly structured language Pascal will be accomplished through lecture and laboratory assignments. Course assignments will be aimed toward the computer science technician with concepts of data structuring and manipulation being emphasized. A major program will be developed near the final portion of the course allowing students to pursue individual interests. (1-1-2) Prerequisite: CP 1122, CP 1132

CP 2133 Numerical Methods

Study of numerical methods used for solution of mathematical problems on the computer. Topics include error analysis, linear systems of equations, numerical integration techniques, numerical solutions of partial differential equations and finite differences. The algorithmic approach and the efficient use of the computer are emphasized in laboratory exercises. (2-1-3) Prerequisite: CP 1122, Concurrent: GT 1224

CP 2433 Assembly Language Programming

Programming of the digital computer at the machine language and assembly language levels. Includes numerical processing, data storage considerations, macros, and linkages with higher-level languages. Laboratory work includes the solution of several assembly language programming problems on the Harris computer system. (2-1-3) Prerequisite: CP 1223

CP 2143 Computer Systems Seminar

Study of state-of-the-art computer hardware and software systems. Includes multiprogramming, teleprocessing, operating systems, virtual storage, and time sharing systems. Laboratory work includes Job Control programming, tape and disk file handling, and study of the Harris computer operating system. (2-1-3) Prerequisite: CP 2433

CP 2222 RPG

This course introduces the student to the Report Program Generator (RPG) programming language, used primarily for generation of business reports such as payroll, statistical studies, accounts receivable, accounts payable, inventory and material accounting, and other business oriented applications. Lab work includes solution of several business report problems. (1-1-2) Prerequisite: CP 1132

CP 2232 Computer Graphics

Study of the use of the computer to process and output graphic information. Includes overview of various computer graphics hardware including plotters, digitizers, and graphics display terminals. Laboratory work includes design of software for genera-

tion of charts, graphs, and mechanical drawings. Also included are mathematical concepts needed for three-dimensional drawings, projections, and animation. (0-2-2) Prerequisite: GT 1212 or GT 1253, CP 1122

CP 2233 Statistics with Computer Application

An introduction to elementary statistics with emphasis on applications using the computer. Topics include description and representation of sample data, probability, theoretical distributions, sampling, estimating, correlation, regression, and computer statistical software packages. (2-1-3) Prerequisites: CP 1122, CP 1132 or CP 1212, GT 1213, or GT 1253

CP 2444 Analog Computer Methods with Applied Differential Equations

Introduction to analog to digital converters, digital to analog converters, hybrid systems, and electronic analog computer systems. Also analog system simulation on the digital computer. Laboratory work includes use of elementary mathematical models demonstrating practical applications of differential equations and their solutions on analog and digital computers. (2-2-4) Prerequisites: CP 1122, GT 1224, ET 1513

DP 2243 EDP Applications

An opportunity for the student to merge concepts learned in previous programming courses. Emphasis is placed on solution of nontrivial problems such as those experienced in a business computing environment. Documentation practices and written reports are emphasized. (1-2-3) Prerequisite: CP 1123

CP 2930 Problems in Computer

Opportunity for advanced study and practical experience with specific problems selected jointly by the instructor and student in the field of Computer Technology. (1 to 6) Prerequisite: Instructor's Consent



**MECHANICAL ENGINEERING
TECHNOLOGY**

MECHANICAL ENGINEERING TECHNOLOGY

The Mechanical Engineering Technology program prepares the graduate for a position in mechanical and/or manufacturing industries. This program embraces the design, manufacture and production of mechanical products and the tools, machines and processes by which they are made. It also deals with sales and maintenance of such products, tools and machines. The two-year program is designed to develop the student's ability to proceed in an independent manner to use both trade and technical literature to solve technical problems.

The first year of study finds the mechanical technology student developing a strong base in the areas of mathematics, physical science, manufacturing processes and written and graphic communications. During the second year, the student develops abilities in such areas as materials of industry, fluid mechanics, mechanisms and designs of mechanical elements.

Mechanical Technology, though not a new science, has continually been an exciting and rewarding field involved with development of products for today and tomorrow. New product ideas in energy, transportation, product manufacturing, and other areas involving mechanical devices indicate that rapid advances in the field are continually being made.

Mechanical Engineering Technology

The Mechanical Engineering Technician is concerned with the development, testing, evaluation, detailing and design of machinery, equipment, instruments and other mechanical devices. The technician's duties may involve drafting, use of handbooks and tables, calculations of strength and reliability, selection of materials, and cost estimating for the development or modification of the design of almost any type of machine or mechanism. Technicians may conduct performance and endurance tests on various mechanical devices and report the results.

Because of the many facets of this field, mechanical engineering technology graduates, always in high demand, have found fine careers in industries in Kansas and across the United States.

Mechanical Engineering Technology Curriculum (MT)

This curriculum is accredited by the Accreditation Board for Engineering and Technology (ABET)

First Year—Fall Semester

Course No.	Course Name	Hours		Semester Credits
		R	L	
GT 1212	Plane Trigonometry	2	0	2
GT 1213	College Algebra	3	0	3
MT 1111	Descriptive Geometry	0	1	1
MT 1112	Technical Drafting	0	2	2
MT 1212	Manufacturing Methods I	1	1	2
GT 1713	Written Communications	3	0	3

CP 1212	Introduction to Computer Techniques . . .	1	1	2
	Total Credits			<u>15</u>
	First Year—Spring Semester			
GT 1224	Analytic Geometry and Calculus	4	0	4
GT 1124	Technical Physics I	3	1	4
MT 1323	Metallurgy	2	1	3
MT 1122	Mechanical Drafting	0	2	2
MT 1222	Manufacturing Methods II	0	2	2
GT 2713	Technical Writing	3	0	3
	Total Credits			<u>18</u>
	Second Year—Fall Semester			
GT 1114	Applied Chemistry I			
	OR			
GT 2334	Technical Physics II	3	1	4
CL 2435	Statics and Strength of Materials	5	0	5
MT 2533	Fluid Mechanics	2	1	3
MT 2433	Elements of Mechanisms	3	0	3
MT 2432	Design Technology I	1	1	2
	Total Credits			<u>17</u>
	Second Year—Spring Semester			
GT 1312	Oral Communications	2	0	2
MT 2341	Mechanical Testing Lab	0	1	1
MT 1722	Thermodynamics I	2	0	2
ET 1513	Basic Electricity	2	1	3
MT 2444	Design Technology II	2	2	4
	Business/Social Science Elective			5
	Total Credits			<u>17</u>
	Total semester credits required for Associate of Technology Degree			
				<u><u>67</u></u>

R—recitation or lecture credit; L—laboratory credit.

* Students should expect to spend 2 hours of study for each hour of class.

Solar Energy Utilization Technology

The Solar Energy Utilization Technology program prepares the graduate for a position in the construction and/or manufacturing industries. During the first year of study, the student develops a strong base in the areas of mathematics, physical science, manufacturing processes and written and graphic communications. During the second year, the student develops abilities in such areas as materials of industry, fluid mechanics, thermodynamics, mechanisms, and design of solar energy collection, storage and distribution systems.

The concept of utilizing solar energy to perform useful tasks in our society is not new. However, the necessity of developing a strong and active technology in the area of alternate energy sources has been recently reemphasized by the realization that the traditional energy sources (oil, coal, hydroelectric, etc.) are being rapidly depleted and becoming more expensive. The student who enters the Solar Energy Utilization Technology field

will become a part of a rapidly expanding and constantly changing technology.

The solar technician is concerned with the development, testing, evaluation, design of equipment and control mechanisms of solar utilization systems. The technician's duties may involve drafting, use of handbooks and tables, calculations of strength and reliability, selection of materials, and cost estimating for the development or modification of various types of solar collection systems. The technician may also conduct performance and endurance type tests on prototype or development systems and report the results of these tests.

Solar Energy Utilization Technology Curriculum (SO)

First Year—Fall Semester

Course No.	Course Name	Hours*		Semester Credits
		R	L	
GT 1212	Plane Trigonometry	2	0	2
GT 1213	College Algebra	3	0	3
GT 1114	Applied Chemistry I	3	1	4
MT 1112	Technical Drafting	0	2	2
MT 1212	Manufacturing Methods I	1	1	2
GT 1713	Written Communications	3	0	3
MT 1111	Descriptive Geometry	0	1	1
Total Credits				17

First Year—Spring Semester

GT 1124	Technical Physics I	3	1	4
MT 1323	Metallurgy	2	1	3
MT 1122	Mechanical Detailing	0	2	2
MT 1222	Manufacturing Methods II	0	2	2
CP 1212	Introduction to Computer Techniques	1	1	2
MT 1722	Thermodynamics I	2	0	2
GT 2713	Technical Writing	3	0	3
Total Credits				18

Second Year—Fall Semester

GT 1224	Analytic Geometry and Calculus	4	0	4
CL 2435	Statics and Strength of Materials	5	0	5
MT 2533	Fluid Mechanics	2	1	3
MT 2832	Solar Systems Design Technology I	1	1	2
GT 1312	Oral Communications	2	0	2
Total Credits				16

Second Year—Spring Semester

MT 2341	Mechanical Testing Lab	0	1	1
MT 2743	Thermodynamics II	2	1	3
ET 1513	Basic Electricity	2	1	3
MT 2844	Solar Systems Design Technology II	2	2	4
	Business/Social Science Elective			5
Total Credits				16

Total semester credits required for Associate of Technology Degree 67

R—recitation or lecture credit; L—laboratory credit.
 * Students should expect to spend 2 hours of study for each hour of class.

MECHANICAL COURSE DESCRIPTIONS

MT 1012 Introduction to Alternate Energy

The various types of alternate energy such as solar, geo-thermal, wind, tides, and bio-mass, will be discussed and presented in terms of their advantages, disadvantages, and availability. Topics will also be discussed in terms of long range vs. short range availability and desirability. Potential environmental impact will also be discussed. (2-0-2) Prerequisite: None

MT 1111 Descriptive Geometry

Orthographic solution involving the point, line, and plane projections, intersections, and surface development of solids, bearings, slope, true length, and true size using descriptive geometry. (0-1-1) Prerequisite or concurrent: MT 1112

MT 1112 Technical Drafting

Lettering, freehand sketching, use of drafting equipment. Theory and applications of orthographic projection and pictorial drawings. Standards for symbols, section views, and dimensioning included. (0-2-2) Prerequisite: None

MT 1122 Mechanical Detailing

Preparation of shop drawings for manufacturing, fabrication or assembly. Specifications of size, shape, material and manufacture. Specifications of standard fasteners including threads, rivets, keys, splines. Allowance specifications for mating parts and surface quality. Introduction to graphic illustration. (0-2-2) Prerequisite: MT 1112

MT 1212 Manufacturing Methods I

Study and practice in gas, arc, TIG welding, spot weld, weld testing, cost estimation. Introduction to welding metallurgy and special welding processes. (1-1-2) Prerequisite: None

MT 1222 Manufacturing Methods II

Laboratory practice in performing basic machine shop operations on lathes, milling machines, drill presses. Use of hand tools, metal cutting machines and grinders included. Laboratory observation of foundry, plastic and electric discharge machine operations. (0-2-2) Prerequisite: None

MT 1323 Metallurgy

Basic principles of physical metallurgy. Structure of metals and alloys. Phase transformations of ferrous and non-ferrous metals. Testing and microscopic examination of metals. (2-1-3) Prerequisite: None

MT 1722 Thermodynamics I

Thermodynamic laws and equations. Use of tables and charts for properties of important fluids. Applications to systems used for

producing, transforming, and applying heat and mechanical energy. Brief introduction to heat transfer. (2-0-2) Prerequisite: GT 1213

MT 2341 Mechanical Testing Laboratory

Principles of mechanical testing. Instrumentation and measurement in the areas of loads, stresses, deformations, heat flow, and other qualities. Preparation of written laboratory reports. (0-1-1) Prerequisites: CL 2435

MT 2432 Design Technology I

A study of the design process. Use of handbooks and industrial catalogs to select components including belts, chains, gears, springs, clutches and bearings to satisfy design requirements. Introduction to the use of computers in solving design problems. (1-1-2) Prerequisite or concurrent: MT 2433

MT 2433 Elements of Mechanisms

Fundamental motion concepts of displacement, velocity and acceleration. Analytical and graphical analysis and synthesis of linkages, gear trains, cams, pulleys and combinations of these elements. (3-0-3) Prerequisites: GT 1124 and MT 1112

MT 2444 Design Technology II

Continued study of design process. Investigation of theories of failure, stress analysis, stress concentration, deflections, materials and costs relating to machine design. Group laboratory design projects requiring application of previously learned concepts and methods in detailing, manufacturing, mechanisms, and other courses relative to machine design. (2-2-4) Prerequisites: CL 2435 and MT 2432

MT 2533 Fluid Mechanics

Fundamental concepts of fluid mechanics. Study of buoyancy, energy equation, viscosity, flow measurement. Selected applications of fluid mechanics to civil and mechanical fields. (2-1-3) Prerequisites: GT 1212 and GT 1213

MT 2743 Thermodynamics II

Continued studied in Thermodynamics. Major emphasis in the area of heat transfer and application in Solar Energy. (2-1-3) Prerequisite: MT 1722 and Sophomore Standing

MT 2832 Solar Systems Design Technology I

A study of the design process. Use of handbooks and industrial catalogs to select components, including pumps, manual valves, schematic valves, regulators, temperature sensing systems and instrumentation devices. Introduction to the use of computers in solving design problems. (1-1-2) Prerequisite or concurrent: MT 2433 and MT 2533

MT 2844 Solar Systems Design Technology II

Continued study of design process. Investigation of theories of failure, stress analysis, stress concentration, fatigue, materials and costs as related to system design. Group laboratory design projects requiring application of previously learned concepts and courses related to systems design. (2-2-4) Prerequisites: CL 2435 and MT 2832

MT 2930 Problems in Mechanical

Opportunity for advanced study and practical experience with specific problems of the student's choice in the field of Mechanical Technology. (0-6) Prerequisite: Instructor's consent



**GENERAL ENGINEERING
TECHNOLOGY**

GENERAL ENGINEERING TECHNOLOGY

Many industries have shown a need for a technician who is diverse in skills. Often these companies don't want or are unable to fill their staff with enough specialists to cover each of the many areas they may require. A company may rather have one versatile individual with a broad-based background. Jobs such as inspector, estimator, detail draftsman, test technician, technical writer, production planner, and many others require this type of broad-based education. Therefore, the General Engineering Technology program provides graduates with a diversified background which includes study in the fields of electronics, civil, computer and mechanical engineering technologies to meet the needs of these industries.

Students in General Engineering Technology are offered a flexible program of study that draws courses from several curricula at KTI. Ten of the sixty-six hours required for graduation are electives, allowing the student to choose courses of specific interest to the individual.

The education of the general engineering technician is "things" oriented. Technicians must have the ability to visualize objects and to make sketches or drawings. It requires that they have an aptitude in science and/or mathematics. Often jobs require some familiarity with one or more of the skilled trades, although not the ability to perform as a craftsman. Some jobs demand extensive knowledge of industrial machinery, tools, equipment, and processes. Many jobs held by these technicians are supervisory and require both technical knowledge and the ability to supervise people.

General Engineering Technology Curriculum (GT)

First Year—Fall Semester

Course No.	Course Name	Hours*		Semester Credits
		R	L	
GT 1212	Plane Trigonometry	2	0	2
GT 1213	College Algebra	3	0	3
CP 1212	Introduction to Computer Techniques . . .	1	1	2
MT 1112	Technical Drafting	0	2	2
GT 1713	Written Communications	3	0	3
GT 1114	Applied Chemistry I	3	1	4
Total Credits				16

First Year—Spring Semester

ET 1513	Basic Electricity	2	1	3
GT 1224	Analytical Geometry and Calculus	4	0	4
GT 1124	Technical Physics I	3	1	4
CP 1122	FORTTRAN	1	1	2
GT 1312	Oral Communications	2	0	2
	Technical Elective †	2	0	2
Total Credits				17

Second Year—Fall Semester

GT 2633	System Analysis and Quality Control	3	0	3
CL 2435	Statics and Strength of Materials	5	0	5
GT 2334	Technical Physics II	3	1	4
	Technical Elective †	4	0	4
				16

Second Year—Spring Semester

MT 1722	Thermodynamics I	2	0	2
GT 2713	Technical Writing	3	0	3
GT 2643	Electric Power and Devices	1	2	3
	Technical Elective†	4	0	4
	Business/Social Science Elective	5	0	5
				17
Total Credits				17
Total semester credits required for Associate of Technology Degree				66

† Technical Electives: (10 required) Students may choose from all courses taught at KTI, however, all electives must be approved by General Technology Department Head and the student's advisor.
 R—recitation or lecture credit; L—laboratory credit.
 * Students should expect to spend 2 hours of study for each hour of class.

GENERAL COURSE DESCRIPTIONS

The following courses have been specifically designed for the General Engineering Technology and Chemical Engineering Technology students to enhance their overall employability.

GT 2633 System Analysis and Quality Control

An introductory course in system analysis and statistical quality control, including work in the areas of basic logic, control charts, and methods for determining necessary requirements for specific levels of finished product quality. The basic rules of reason are explored as fundamental concepts. (3-0-3) Prerequisite: GT 1213

GT 2612 Plant Engineering Technology

Types of corrosion and failure, corrosion control and materials selection; fire prevention and protection, portable extinguishers, hydrants and sprinklers; steam generation, compressors, turbines, cooling towers, heating, ventilation and air conditioning; waste disposal and air pollution control; evaluation of purchased equipment costs; operating costs and depreciation; factors affecting plant location. (2-0-2) Prerequisite: None

GT 2622 Instrumentation and Control

Principles of measurement and control; use of block diagrams in control system analysis, applications to industrial process control. The operating parameters to be measured and controlled are: pressure, temperature, flow rate, liquid level and concentration. Laboratory work includes calibration of thermocouples, pressure regulators, orifice meters, and performance testing of control valves. (1-1-2) Prerequisite: GT 2334

GT 2643 Electric Power and Devices

An approach to technical understanding of the concepts and uses of alternating current power in industry. Strong alternating current theory with emphasis on motor speed controls, phase shifts, control systems, simpler forms of logic switching circuits, process systems with self-check, and servo loop principles. Various forms of transducers are examined. Field trips are made to study representative motors and load control systems. (1-2-3) Prerequisite: GT 2334 concurrently

GENERAL STUDIES COURSES

MATHEMATICS

GT 1515 Mathematics

A five-hour non-degree-credit course in the principles of Basic Mathematics. The course includes addition, subtraction, multiplication, division, fractions, percents and an introduction to Algebraic and Trigonometric concepts. (5-0-5) Concurrent recommendation GT 1532

GT 1215 College Algebra/Math Review

A reduced pace College Algebra course with five contact hours per week. The course will cover the same material as GT 1213 College Algebra with approximately the first two weeks emphasizing Basic Mathematics. The student will receive 5 hours of credit, 3 of which will count towards graduation. Students are placed in this course on the basis of their score on the Kansas Technical Institute Math Placement Exam. (5-0-5) Prerequisite: None

GT 1532 Mathematics Laboratory

A laboratory course in problem solution for those students with low scores in Kansas Technical Institute Math Placement Examination. The student is grounded in basic mathematics principles by instructor-supervised exercises from the mathematics course or problems from other classes in the student's discipline. (0-2-2) Prerequisite: None

GT 1253 Elementary Functions

A three-hour course composed of two credit hours of in class lecture and one credit hour of laboratory. The lecture portion to include basic algebraic, geometric, and trigonometric concepts. The course is designed to improve the student's understanding of the basic algebraic and trigonometry concepts and to improve his/her problem solving abilities. The purpose of the laboratory is to help review mathematic concepts, provide individual help, and apply mathematical concepts related to the student's technical area. (2-1-3) Prerequisite: None

GT 1212 Plane Trigonometry

The fundamentals of College Trigonometry with emphasis on applications to engineering technology. Course content includes right and oblique triangle solutions, vectors, polar coordinates, angular velocities, use of trigonometry in surveying, tool and machine design, sine and cosine law uses, introduction to identity solutions, and an introduction to the conic sections. (2-0-2) Prerequisite: KTI Qualifying Exam or proper background

GT 1213 College Algebra

The fundamentals of Algebra, as taught at the college level, modified to emphasize applications and de-emphasize theoretical developments. In particular, certain properties and theorems are stated without proof. Course content includes identifying number sets up to and including complex numbers, fundamental concepts of Algebra as a review, operations with algebraic fractions, exponents and radicals, logarithms, linear equations in one and multiple variables, linear functions and graphs, systems of equations, determinants, quadratic equations, and solutions involving higher degree equations. (3-0-3) Prerequisite: KTI Qualifying Exam or proper background

GT 1224 Analytical Geometry and Calculus

A unified presentation dealing with the emphasis on elementary topics in Calculus and certain selected topics from more advanced areas. These have been selected due to their application in the technologies. The topics are developed in a non-rigorous and intuitive manner, with emphasis being placed on the interpretation of applications of material presented. (4-0-4) Prerequisite: GT 1213, GT 1212

SCIENCE

GT 1114 Applied Chemistry I

A study of the arrangement of matter, the atomic structure, the concepts of chemistry as shown through problem solutions, and energy balances related to interaction of elements. Physical chemistry concepts are included along with an introduction to simplified laboratory procedure in chemical analysis. (3-1-4) Prerequisite: None. Concurrent recommendation: GT 1213

GT 1124 Technical Physics I

A quantitative investigation into the fundamentals of mechanics and heat. The class work and the supportive laboratory are specifically designed to provide the student with an understanding of and a proficiency in measurement and calculation with these principles as they are applied to the solution of technical problems. (3-1-4) Prerequisites: GT 1212, GT 1213

GT 2334 Technical Physics II

A quantitative investigation into the fundamentals of electricity, sound, magnetism, light and atomic physics. The class work and the supporting laboratory are specifically designed to provide the student with an understanding of, and a proficiency in measurement and calculation with these principles as they are applied to the solution of technical problems. (3-1-4) Prerequisite: GT 1124

GT 1324 Applied Chemistry II

Ideal gases, real gases, equations of state and principle of corresponding states; second law of thermodynamics, free energy and criteria of chemical equilibrium; homogeneous chemical equilibria; solubility of gases and solids in liquids, solubility product, phase rule and phase diagrams; electric conductance of solution and ionic equilibria; conductimetric and colorimetric titrations. Laboratory work to involve qualitative and quantitative determinations. (2-2-4) Prerequisites: GT 1114

GT 2134 Organic Chemistry

Study of the reaction mechanism of industrially important reactions, namely: alkylation, aromatization, dehydration, halogenation, hydrogenation, isomerization, nitration, oxidation, reduction, pyrolysis and polymerization. Applications of these reactions in the study of hydrocarbons, alcohols, ethers, aldehydes, ketones, carboxylic acids, fats, oils, waxes, detergents, dyes, carbohydrates and proteins. Laboratory work to involve methods of preparation and analysis of representative compounds. (3-1-4) Prerequisites: GT 1114

COMMUNICATIONS

GT 1702 Developmental English

Guided self-study in basic mechanical skills (i.e., elementary grammar, syntax, spelling, and punctuation) through laboratory exercises for those students entering Kansas Technical Institute with serious deficiencies in these basic writing skills.(2-0-2) Prerequisite: None

GT 1512 Reading Improvement Lab

Supervised self-study in reading skills for students who have special problems in reading, and for students who wish to achieve an above average proficiency in reading. A voluntary course earning two hours of credit.(0-2-2) Prerequisite: None

GT 1312 Oral Communications

Oral Communications teaches the student how to present information persuasively and enjoyably to an audience through the oral medium. The student will plan and give informative, expressive, entertaining, and persuasive reports.(2-0-2) Prerequisite: None

GT 1713 Written Communications

Written Communications is designed to acquaint the student with grammatical and rhetorical skills. Topics covered include vocabulary growth, sentence structure, punctuation, spelling, modes of development (definition, description, classification, etc.), aims of discourse (expression, persuasion, etc.), and paragraph and essay structure. (3-0-3) Prerequisite: None

GT 2713 Technical Writing

Technical Writing applies rhetorical skills to the special writing requirements of business and industry. Course writings will include letter of application, operation manual, proposal, feasibility report, progress report, and research report. (3-0-3) Prerequisite: GT 1713

BUSINESS/SOCIAL SCIENCES

GT 1513 Principles of Accounting I

A study of accounting for the sole proprietorship. A problem approach is utilized to explain concepts and procedures. Included are the recording of business transactions in journals; receivables, payables and inventories. (3-0-3) Prerequisite: GT 1213 concurrently

GT 1523 Principles of Accounting II

A continuation of Principles of Accounting I with an introduction to accounting for partnerships and corporations. Included are costing, forecasting, deferrals, accruals, plant assets, partnership and corporate form of business organization, accounting controls, earnings, and dividends. (3-0-3) Prerequisite: GT 1513

GT 1412 Economics

An examination of how economics decisions are made, both on the national and industrial levels of our economic system. This includes an introduction to the topics of market structure, the price mechanism, business cycles, inflation, and monetary and fiscal policy. (2-0-2) Prerequisite: None

GT 1423 Supervisory Management

An analysis of the responsibilities of the supervisor, with an examination of the skills and practices helpful to developing effective relations with people in a work setting. Topics studied include employee motivation and satisfaction, work group behavior, management processes, employee training and appraisal, handling discipline and resistance to change, and methods of improving productivity. (3-0-3) Prerequisite: None

GT 1413 Introduction to Business

This course surveys the objectives, decisions, and activities within the business organization. Topics include a study of

management responsibilities and controls, organizational structures, marketing activities, production operation decisions, finance and accounting, human resources administration and business law. (3-0-3) Prerequisite: None

GT 1422 Capital Investments Analysis

An introduction to the tools of economic and financial analysis of business expenditures. This includes developing an awareness of interest computation, time-value or money concepts, depreciation, taxes, and methods of evaluating proposals under the conditions of certainty and risk. (2-0-2) Prerequisite: GT 1213

CHEMICAL ENGINEERING TECHNOLOGY

The Chemical Engineering Technology program at Kansas Technical Institute is designed to prepare individuals for immediate gainful employment as engineering technicians in the chemical industry. Graduates of the two-year associate degree program are assured of a stable, challenging and a rewarding career in a dynamically growing industry.

Chemical Engineering technology relates to industrial processes in which raw materials are changed chemically or physically into useful products. Fuels, plastics, synthetic fibers and pharmaceuticals are examples of the wide variety of products of the chemical industry.

Graduates of this program are qualified to perform equally well in chemical production plants, in research and development laboratories and in sales related to chemicals or chemical manufacturing equipment. Job responsibilities of a chemical engineering technician frequently involve providing support to chemical engineers in process development, plant operation, operator-training, compilation of performance reports, pilot-plant set up and preparation of information for computer analysis.

The curriculum requires students to work in different laboratories which include instrumental analysis lab, organic chemistry lab, unit operations lab and industrial processes lab. Students are also provided the option to undertake summer internship in the chemical industry thereby broadening their outlook toward the profession.

Chemical engineers and chemical engineering technicians are the leaders in terms of salaries offered to professionals in the various engineering disciplines. The deep involvement of the profession in purging the environment, providing adequate clean energy, providing health care and creating effective transportation systems clearly indicates that no end is in sight to the challenge facing chemical engineering technicians.

Chemical Engineering Technology Curriculum (CH)
First Year-Fall Semester

<i>Course No.</i>	<i>Course Name</i>	<i>Hours</i>		<i>Semester</i>
		<i>R</i>	<i>L</i>	<i>Credits</i>
CP 1212	Introduction to Computer Techniques . . .			
	OR			
CP 1122	FORTTRAN	1	1	2
GT 1114	Applied Chemistry I	3	1	4
GT 1212	Plane Trigonometry	2	0	2
GT 1213	College Algebra	3	0	3
GT 1713	Written Communications	3	0	3
MT 1112	Technical Drafting	0	2	2

Total Credits 16

First Year-Spring Semester

CH 1423	Materials and Energy Balances	3	0	3
GT 1124	Technical Physics I	3	1	4
GT 1224	Analytical Geometry and Calculus	4	0	4
GT 1324	Applied Chemistry II	2	2	4
GT 2713	Technical Writing	3	0	3

Total Credits 18

Second Year—Fall Semester

CH 2312	Chemical Reaction Kinetics	2	0	2
CH 2414	Unit Operations I	2	2	4
CH 2524	Industrial Processes	2	2	4
GT 2134	Organic Chemistry	3	1	4
GT 2643	Electric Power and Devices	1	2	3

Total Credits 17

Second Year—Spring Semester

CH 2424	Unit Operations II	2	2	4
CH 2622	*Process Design Lab	0	2	2
GT 1312	Oral Communications	2	0	2
GT 1413	Supervisory Management	3	0	3
GT 1422	Capital Investments Analysis	2	0	2
GT 2612	Plant Engineering Technology	2	0	2
GT 2622	Instrumentation and Control	1	1	2

Total Credits 17

Total semester credits required for Associate of Technology Degree 68

* Enrollment in either Internship or Process Design Lab is required. Internship may be undertaken in the Summer Session between the first year and second year or in the Summer Session following semester 4.

CHEMICAL COURSE DESCRIPTIONS

CH 1423 Material and Energy Balances

American Engineering System of Units; conservation of mass and energy and its application to the solution of material and energy balance problems; estimation of heat capacities of solids, liquids, and gases; evaluation of steam properties; calculation of heat of reaction and heat solution and mixing; simultaneous use of material and energy balances for steady state processes. Problem-solving by computer programming will be encouraged. (3-0-3)
Prerequisite: GT 1114

CH 2312 Chemical Reaction Kinetics

Review of fundamental kinetic and thermodynamic relationships; batch reactors, steady-state and unsteady state operation of flow reactors; simultaneous reactions, consecutive reactions and complex reactions; effect of temperature, pressure and concentration on equilibrium conversion; relationship between equilibrium constants; development of energy-balance equations for plug flow, mixed flow and batch reactors; design of thermal and catalytic reactors. (2-0-2) Prerequisite: GT 1324, CH 1422

CH 2414 Unit Operations I

Application of First Law of Thermodynamics to fluid flow; flow measurement; energy requirements of pumps and compressors; thermal conductivity, film-coefficients, emissivity and overall heat transfer coefficient; types of heat exchange equipment and its sizing; filtration theory and types of filtration equipment; energy requirements in crushing and grinding; theory of settling of particles and types of settlers. Laboratory work to involve experimentation with a fluid flow assembly, heat exchanger, filter press and crusher. Formal laboratory reports will be required. (2-2-4) Prerequisite: GT 1124, GT 1324, CH 1422

CH 2424 Unit Operations II

Classification of mass-transfer operations and unit systems; vapor-liquid equilibria, flash vaporization, simple distillation, stagewise distillation and packed tower distillation; liquid-liquid equilibria, stage-type extraction and continuous contact extraction; gas absorption and desorption; humidification and dehumidification operations; mechanism of absorption and drying. Laboratory work to involve experimentation with a distillation column, a gas-absorption equipment, liquid extraction apparatus and a rotary dryer. Formal laboratory reports will be required. (2-2-4) Prerequisites: CH 2414

CH 2524 Industrial Processes

Water conditioning and environmental protection; fuels, coal chemicals and nuclear industries; cement, glass and alkali industries; sugar, fertilizer and fermentation industries, paper, plastics, synthetic fibers and synthetic rubber industries; petroleum refining, petrochemical and pharmaceutical industries. Laboratory work will involve testing of industrially important fuels and chemicals by ASTM methods. (2-2-4) Concurrent: GT 2134

CH 2612 Summer Internship

The student is required to work as a Summer Intern in the industry. A detailed report describing duties, responsibilities and tasks accomplished will be required at the end of the internship period. (0-2-2) Prerequisite: CH 1422

CH 2622 Process Design Lab

The student will be assigned a practical design problem which will require setting up the necessary equipment for performing an experiment, obtaining data and making necessary calculations to get the desired results. (0-2-2) Prerequisite: Concurrent with CH 2424.

CONTINUING EDUCATION

The Continuing Education Division offers special courses to meet the needs of individuals, groups, and organizations. Workshops, seminars, short-term and full-term courses are Kansas Technical Institute's answer to the State's challenge to provide educational opportunities in fields of technology.

Credit and non-credit courses reflect the interests and needs of the individual community or state and cover a wide variety of subjects, providing information for both occupational and personal use. Instructors are leading professional men and women on the institute's faculty. For many of these classes there are no entrance requirements and class schedules are set for the convenience of the students during both daytime and evening hours.

Special courses can be designed to meet the needs of individuals, groups, and organizations. The Continuing Education staff is eager to cooperate with firms that wish to arrange for courses, workshops or seminars in conjunction with their own training programs. These services can be provided on-campus, in-plant or in the respective communities where technical services are needed but not readily available. Continuing Education Units (C.E.U.'s) may be granted in appropriate cases.

AP 1113 Private Pilot Ground School

Basic ground school in preparation for the FAA Private Pilot Certificate. FAA exams may be taken upon completion of the course. (3-0-3) Prerequisite: None

AP 1123 Instrument Pilot Ground School

A ground school course in preparation for FAA Instrument Rating. FAA exams may be taken upon completion of the course. (3-0-3) Prerequisite: AP 1113/Private Pilot License and Flight Experience

AP 1412 Computer Fundamentals

This course is designed to build an awareness of computers and their use as a tool in a variety of applications. In addition to an exposure to the BASIC programming language, this course will give the student an awareness of terminology, computer equipment, logic systems, packaged programs, and the criteria necessary to intelligent purchasing of hardware and software. This

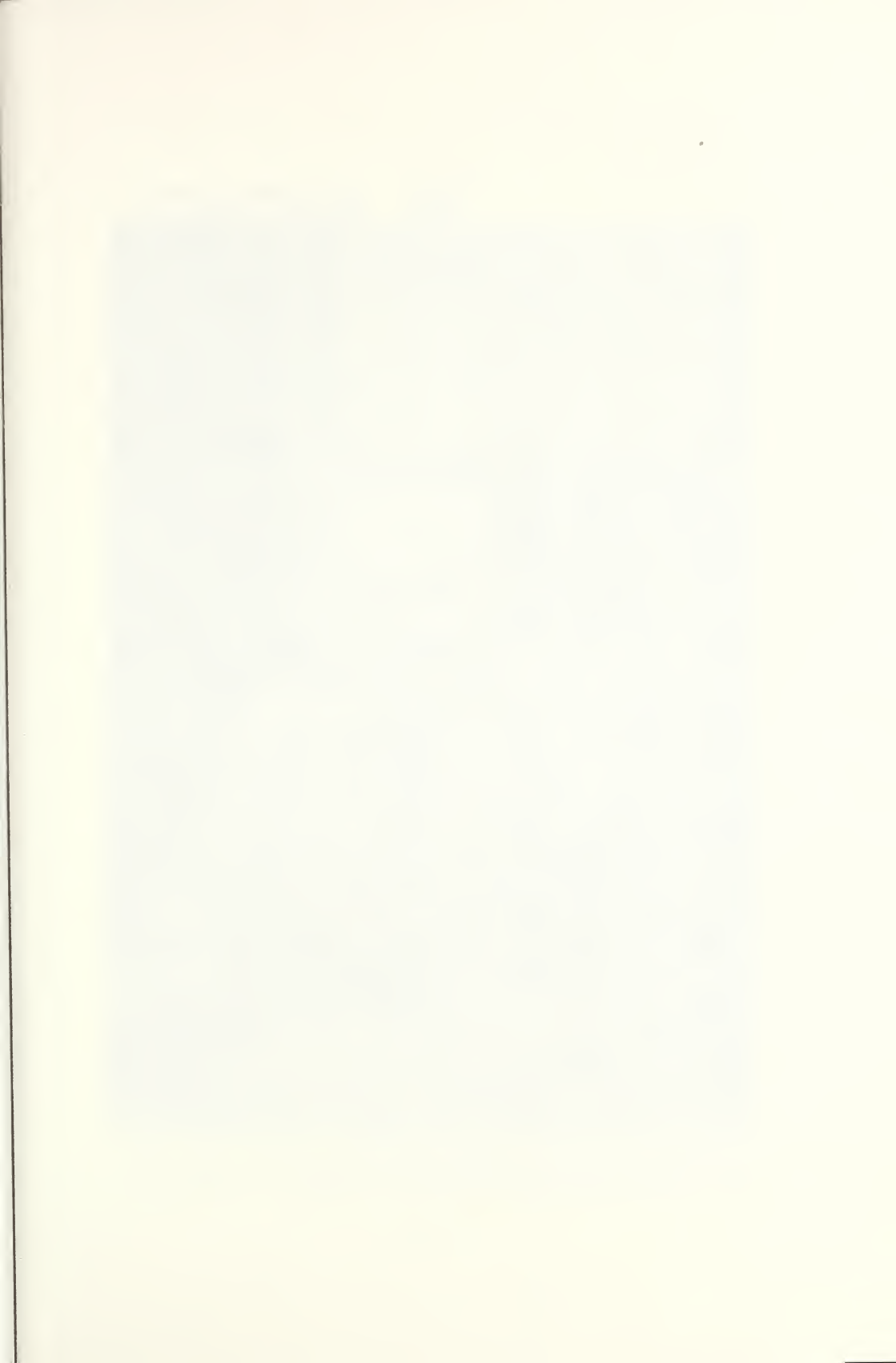
course may be offered to the general public or to special occupational groups desiring specific applications in their field.

AP 1512 First Line Management

This course is designed for individuals currently working in supervisory positions, but who may have had little formal training in supervision techniques. A broad spectrum of human relations and management techniques will be covered, including employee psychology and motivation, leadership, team building, work assignments, discipline, morale, training, handling conflict, evaluation and planning. (2-0-2) Prerequisite: None

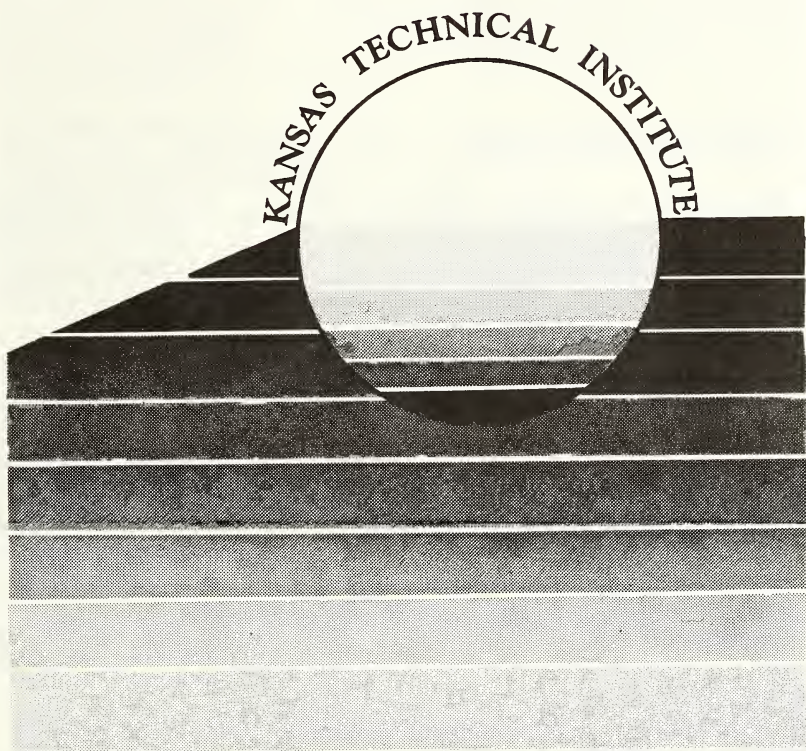
AP 1542 Management, Motivation, and Goals

Designed to assist the supervisors and managers in developing motivation techniques and goal setting methods. Topics of management skills include both personal and group related applications. (2-0-2) Prerequisite: None





CONTROL OF THE INSTITUTE



BOARD OF CONTROL

Administration

The governing board of the Institute is the Kansas State Board of Regents. It consists of nine members appointed by the Governor. The board elects its own chairman. The President of Kansas Technical Institute, who is charged by statute with the general management of the Institute, is appointed by the Board of Regents.

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Shelley Sutton, B.A. Public Affairs/Admissions Officer
Debbie Voss, B.A. Admissions Counselor

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