STATE TECHNICAL INSTITUTE
AT KNOXVILLE
CATALOG 1981-83

State Technical Institute at Knoxville does not discriminate
the basis of race, sex, color, religion, national origin, a
handicap, or veteran status in provisions of educational op-
portunities or employment opportunities and benefits.

State Tech does not discriminate on the basis of sex
handicap in the education programs and activities which
operates, pursuant to the requirements of Title IX of the Edu-
tion Amendments of 1972, Pub. L. 92-318; and Section 504
the Rehabilitation Act of 1973, Pub. L. 93-112; respectively.
Policy extends to both employment by and admission to
college.

Inquiries concerning Title IX and Section 504 should
directed to the Director of Administrative Affairs, State Techn
Institute at Knoxville. Charges of violation of the above po
should also be directed to the Director of Administrative Affa

PRIVACY RIGHTS ACT OF PARENTS AND STUDENTS
PUBLIC LAW 93-380

State Technical Institute at Knoxville adheres to the gu-
lines developed by the Department of Health, Education
Welfare regarding the Educational Rights and Privacy
(Buckley Amendment) of 1974 Public Law 93-380. State T
provides students and parents of dependent students acces
official records directly related to them and limits dissemina
d of personally identifiable information without the student's
sent. Students enrolled at State Technical Institute at Knox
may review guidelines and procedures regarding Public L
93-380 in the Office of Student Affairs.
STATE TECHNICAL INSTITUTE
AT KNOXVILLE
P.O. Box 19802
3435 Division Street
Knoxville, Tennessee 37919
(615) 584-6103

Established as a state institution on September 9, 1974, State Technical Institute at Knoxville operates under the Tennessee State Board of Vocational Education through the Tennessee State Department of Education, Division of Vocational-Technical Education.

ACADEMIC YEAR

The State Technical Institute at Knoxville is a two-year, college-level institution which operates on the quarter system with Fall, Winter, Spring and Summer Quarters constituting the academic year.

IMPORTANT NOTICE

The statements in this catalog are for information only. The provisions of this publication do not form a contract between the student and the State Technical Institute at Knoxville. The college reserves the right to change any provisions or requirements at any time within the student's term of residence. The college further reserves the right, at any time, to ask a student to withdraw when it considers such action to be in the best interest of the Institute.

CHANGE IN REGULATION

Announcements contained within the catalog are subject to change at the discretion of the Institute. Courses listed in this catalog are subject to change through normal academic channels. New courses and changes in programs are initiated by the cognizant departments and approved by the Academic Council, Dean of Instruction, and President. Any changes in catalog items will be announced to the State Tech community and published in a fall Catalog Supplement.
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**ACADEMIC CALENDAR**

**SUMMER 1981**
- Registration and Advisement
- Classes Meet as Scheduled
- Last Day to Register
- Holiday
- Last Day to Add Classes
- Last Day to Drop/Withdraw
- Holiday, Labor Day
- Last Day of Classes
*Commencement*

<table>
<thead>
<tr>
<th>June 29</th>
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**FALL 1981**
- New Student Orientation and Registration
- Registration and Advisement
- Classes Meet as Scheduled
- Last Day to Register
- Last Day to Add Classes
- Last Day to Drop/Withdraw
- Holiday, Thanksgiving
- Last Day of Classes

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<th>September 28</th>
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<th>November 26-27</th>
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**WINTER 1982**
- New Student Orientation and Registration
- Registration and Advisement
- Classes Meet as Scheduled
- Last Day to Register
- Last Day to Add Classes
- Last Day to Drop/Withdraw
- Last Day of Classes

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SPRING 1982
Registration and Advisement
Classes Meet as Scheduled
Last Day to Register
Last Day to Add Classes
Holiday, Good Friday
Last Day to Drop/Withdraw
Last Day of Classes
Commencement

SUMMER 1982
Holiday, Independence Day
Registration and Advisement
Classes Meet as Scheduled
Last Day to Register
Last Day to Add Classes
Last Day to Drop/Withdraw
Holiday, Labor Day
Last Day of Classes
*Commencement

FALL 1982
New Student Orientation and Registration
Registration and Advisement
Classes Meet as Scheduled
Last Day to Register
Last Day to Add Classes
Last Day to Drop/Withdraw
Holiday, Thanksgiving
Last Day of Classes

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November 25-26
December 17
## WINTER 1983

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</table>

- **New Student Orientation and Registration**
- **Registration and Advisement**
- **Classes Meet as Scheduled**
- **Last Day to Register**
- **Last Day to Add Classes**
- **Last Day to Drop/Withdraw**
- **Last Day of Classes**

## SPRING 1983

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<th>March</th>
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- **Orientation, Advisement, Registration**
- **Classes Meet as Scheduled**
- **Last Day to Register**
- **Holiday, Good Friday**
- **Last Day to Add Classes**
- **High School Tour Day**
- **Last Day to Drop/Withdraw**
- **Last Day of Classes**
- **Commencement**

## SUMMER 1983

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- **Holiday, Independence Day**
- **Orientation, Advisement, Registration**
- **Classes Meet as Scheduled**
- **Last Day to Register**
- **Last Day to Add Classes**
- **Last Day to Drop/Withdraw**
- **Last Day of Classes**
- **Commencement**

*Commencement exercises for these quarters are dependent upon whether a sufficient number of graduates warrants a ceremony.*
**FALL 1983**

- New Student Orientation and Registration
- Registration and Advisement
- Classes Meet as Scheduled
- Last Day to Register
- Last Day to Add Classes
- Last Day to Drop/Withdraw
- Holiday, Thanksgiving
- Last Day of Classes

**OCTOBER**

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PURPOSE OF
STATE TECHNICAL INSTITUTE
AT KNOXVILLE

The purpose of the State Technical Institute at Knoxville is:

To serve the people of East Tennessee by

Providing classroom and laboratory instruction (in one and two-year programs) to prepare adults for employment as technicians.

Providing training to increase the competence of employed adults so that they may become technicians or move to a higher level of responsibility.

To serve business, industry, and government in East Tennessee by

Providing technicians for employers and training to increase the competence of employees.

Providing technician training to attract business and industry to East Tennessee and to encourage business and industry now located in this region to expand.

Services to the people of East Tennessee and services to business, industry, and government are compatible, because:

The people of East Tennessee may obtain positions as technicians at good salaries. State Tech's record for placing graduates in jobs for which they are prepared is almost 100 percent.

Business, industry and government will have available the technicians essential for their operations.

RECOGNITION

Approved by the Tennessee State Board for Vocational Education, State Technical Institute at Knoxville is granted the privilege of awarding the Associate of Engineering degree, Associate of Science degree, and certificates.

State Technical Institute at Knoxville is accredited by the Southern Association of Colleges and Schools Commission on Colleges, which is the regionally-recognized accrediting organization.

All associate degree engineering technology programs — mechanical, chemical, construction, and electrical — are accredited by the Accreditation Board for Engineering and Technology. The computer accounting degree program is accredited by CPDA (Council for Professional Development in Accountancy).

State Tech is approved under the appropriate laws governing the Veterans Administration to offer training for veterans and other eligible persons. Also, Federal Law authorizes State Tech to enroll nonimmigrant alien persons.

State Tech is an official member of the following organizations:

American Association of Collegiate Registrars and Admissions Officers
American Association of Community and Junior Colleges
American Society for Engineering Education
Greater Knoxville Chamber of Commerce
National Association of College and University Business Officers
National Association of Student Personnel Administrators
Society for the Advancement of Management
Southern Association of Collegiate Registrars and Admissions Officers
Southern College Placement Association
Tennessee Association of Collegiate Registrars and Admissions Officers
Tennessee College Association
Tennessee College Placement Association
Tennessee College Public Relations Association
Tennessee Valley Personnel Association
TECHNICIAN: A DEFINITION

Technicians are qualified specialists who apply scientific and engineering knowledge in business, industry, or government. Often having the responsibility of converting ideas or theories into workable models, technicians fill the gap between engineers and craftworkers or between business managers and computers. Technicians must be able to understand and speak the language of both the engineer or manager and the craftworker or computer. Those who have the ability to combine theory and application serve a special and necessary function in our advancing technology.

Here are examples of technology teams:

<table>
<thead>
<tr>
<th>Professional Engineer, Scientist or Manager (four-year degree or better)</th>
<th>TECHNICIAN (two-year associate degree)</th>
<th>Craftworker (one- or two-year certificate)</th>
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<tbody>
<tr>
<td>Mechanical Engineer</td>
<td>Mechanical Engineering Technician, or Associate Engineer</td>
<td>Welder</td>
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<tr>
<td>Systems Analyst</td>
<td>Computer Programmer</td>
<td>Keypunch Operator</td>
</tr>
<tr>
<td>Architect</td>
<td>Architectural Draftsman</td>
<td>Carpenter</td>
</tr>
</tbody>
</table>
GENERAL INFORMATION
Procedures for Admission

ENTRANCE REQUIREMENTS
A person applying for admission to an Associate Degree program at State Technical Institute at Knoxville must be a high school graduate or have an equivalency diploma (GED) with a minimum composite score of 45. Admission to special courses and certificate programs is open to adults who meet requirements for specific programs and can benefit from additional coursework.

It is recommended that applicants who have not previously earned satisfactory college-level credits submit scores from the American College Testing (ACT) examination. Placement tests are administered by State Tech before registration to most new students who do not provide ACT scores.

Each student must be of good moral character and meet the standards of physical ability required by the occupational field which he or she plans to enter. State Technical Institute at Knoxville reserves the right to reject any applicant whose records and attitude do not predict success in the college’s environment.

The college will provide opportunities for education to all qualified applicants without regard to race, sex, color, religion, national origin, age, or handicap.

FOREIGN NATIONAL STUDENTS
A person who is a citizen or permanent resident of a country other than the United States is classified for educational purposes as a foreign national student. Foreign national students whose native language is not English must present a score of at least 500 on the Test of English as a Foreign Language. Foreign nationals are required to submit the same credentials for admission as are required of other students and, in addition, must also submit the following:

1. An official statement indicating how expenses will be met while a student in the United States.
2. Official status with the U.S. Department of Justice, Immigration Service.
3. Notification that there is in the college's possession a current Form I-94, stating one is attending a college in the United States.

Any exception for admission of a foreign national or refugee must be approved by the Dean of Student Affairs.

APPLICATION STEPS
All applicants must submit a completed application for admission. Applications are available in the Admissions and Records Office. Applicants for the associate degree programs must also submit a high school transcript certifying graduation or a copy of GED scores and complete transcripts of any previous work from a regionally accredited college. No letter of acceptance is issued until an application is completed, graduation from a high school is certified and on file (or a minimum score of 45 on GED is on file), if not a college transfer student, and any previous accredited college transcripts are received and evaluated from all college transfer students.

DEGREE STUDENTS
Applicants for the associate degree programs must complete and submit the following:

1. Student application for admission. Application forms may be obtained from the Admissions and Records Office.
2. Transcript of high school course work certifying graduation.
3. Satisfactory General Educational Development (GED) test scores, if ap-
applicant did not graduate from high school.

4. Official transcripts from other colleges or universities attended. Transfer students from regionally accredited colleges need not submit high school transcripts or G.E.D. scores.

5. The American College Test (ACT) is not required, but is strongly recommended for each student.

CERTIFICATE STUDENTS

Applicants for certificates must complete and submit a student application. Application forms may be obtained from the Admissions and Records Office.

SPECIAL STUDENT

A special student is one who (1) enrolls for a special course but does not expect to complete degree or certificate requirements or (2) has not satisfied entrance requirements for either a degree or the Engineering Graphics certificate program. College credit for special courses may be used to meet requirements for an associate degree or certificate program.

A student applying as a candidate for a degree or Engineering Graphics certificate, who has not submitted nor completed entrance requirements (high school graduation certification, previous college transcripts, or State Tech placement test scores), will be admitted as a special student. The student must complete entrance requirements during the first quarter of attendance or be subject to administrative dismissal.

TRANSFER STUDENTS AND CREDIT

Applicants transferring from regionally accredited colleges or universities must present valid transcripts from each college. Upon receipt of an official transcript, the Admissions and Records Office will grant equivalent credit, after consultation with appropriate division or department chairperson(s).

For V.A. certification, veterans must have transcripts from all regionally accredited colleges or universities attended, and each must be on file beginning the second quarter of attendance. Veterans may not receive benefits of attendance if terminated before ALL admission documents are submitted.

As a rule, applicants eligible for readmission to the institution from which they are transferring are also eligible for admission to State Tech.

Transfer credits are evaluated (see page 22 for details on Transfer Credit), if they can be related to the student's field of study. Credit will be given for work taken at regionally accredited institutions. No credit will be given unless a grade of C or above was received. Veterans should not register for courses which will transfer from previous colleges. The VA will not pay benefits for repeated courses if a passing grade was received for the original attempt.

Armed forces education experience will be evaluated according to guidelines of the American Council on Education. The college will require verification from official military records.

PLACEMENT TESTING

All applicants must complete the college's pre-admission testing prior to registration. The Engineering Technology applicants take the following tests:

1. Reading
2. Written English
3. Mathematics Computations
4. Elementary Algebra

The Business Technology applicants take the following tests:

1. Reading
2. Written English
3. Mathematics Computations

All or part of these tests may be waived if an applicant has any of the following:

1. Scores on the American College Test (ACT)
2. Transfer credit from a regionally accredited institution with grades of "C" or above in one course in English and one course in mathematics.

These transcripts must be submitted to the Admissions and Records Office prior to registration, preferably with your application submission.

3. Special permission from the Head of Admissions and Records Department or the Head of the Developmental Studies Department.

RE-ADMISSION

A former student at State Technical Institute at Knoxville must complete a new application if there has been no attendance at the Institute for four or more quarters. This application must be submitted to the Admissions and Records Office prior to the official registration day and a letter of acceptance must be on file at that time.

If an applicant for re-admission has attended other colleges or universities since last attending State Tech, a complete and official transcript from those institutions must also be on file, including the student requested evaluation of any transfer credit.

NEW STUDENT ORIENTATION AND REGISTRATION

All prospective new students completing application procedures are required to register on the dates shown on the academic calendar and urged to attend a scheduled orientation period prior to it. All new students will be notified of the orientation day and should make every effort to attend.

OFFICIAL ENROLLMENT

Credit will be granted only for courses in which the student is officially registered, and has paid appropriate fees.

ADDING OR DROPPING COURSES

A student can add a course(s) within the four class days following the first day classes meet with permission of the advisor and instructor(s). A student may drop a course(s) within 41 days of the official registration date. All appropriate signatures must be affixed on the "Add/Drop/Withdrawal" form in order to make it valid and ready for processing. Each date is listed in the official college calendar.

When complete withdrawal from all courses becomes necessary, appropriate signatures from the Head of Student Services, Academic Advisor, and Financial Aid/Veterans Affairs Counselor on the withdrawal form are essential.
GENERAL INFORMATION
Expenses
Fees for the State Technical Institute at Knoxville are determined by the State Board of Education and are subject to change without notice.

*QUARTERLY FEES
Maintenance Fee (required of all students): The maximum maintenance fee for a full-time student (12 course credit hours or more) will be $105.00 each quarter. The part-time student will pay $9.00 maintenance fee for each course credit hour.

Out-of-State and Foreign Student Tuition (required in addition to the maintenance fee for all out-of-state students): The maximum out-of-state tuition for a full-time student will be $495.00 each quarter. The part-time student will pay $41.00 tuition for each course credit hour.

LATE FEES
A non-refundable late fee of 10 percent of the maintenance fee will be charged for any registration occurring after the official registration date published in the academic calendar. A late fee will not be charged for special and contract courses.

RETURNED CHECK FEE
A fee of $5.00 will be charged for each check returned by the bank for any reason, except for bank error.

TRANSCRIPT FEE
Transcripts sent directly to employers and schools are free. A student may have one free transcript, but each additional copy to the student will cost $1.00.

REFUND POLICY
State Tech will refund a portion of the maintenance fee to any student who officially drops, withdraws, or is dismissed from a course(s). Refunds are computed as follows:

1. Curricula Courses
If drop or withdrawal occurs before official registration day or if class is cancelled or changed due to administrative decisions, the refund is 100 percent. If drop or withdrawal occurs during official registration and before the first day of classes, the refund is 80 percent. If drop or withdrawal occurs within one through 15 calendar days from the official registration date, the refund is 50 percent.

If drop or withdrawal occurs within 16 through 31 calendar days from the official registration date, the refund is 25 percent.

If drop or withdrawal occurs 31 or more calendar days after official registration, there is no refund.

2. Special and Contract Courses
If withdrawal occurs, the refund is the pro rata part of the course hours not attended based on the ratio of hours left after the date of withdrawal to the total hours available for the course.

The refund policy applies to all fees — maintenance, out-of-state, and foreign national fees.

Any amount due the Institute must be satisfied before the refund is made to the student. Where applicable, the refund will be made to the organization or fund paying the maintenance fee.

Refund checks for books purchased in the bookstore will be mailed from the Institute to students who are awarded scholarships after the drop date.
ADMINISTRATIVE DISMISSAL

Students may be administratively dismissed from State Tech if they fail to satisfy payment of the approved fees of the Institute.

A collection process may not be used for the non-interest student maintenance fee loan. The administrative dismissal will be automatic on the first working day following the due date of the note. Exceptions to this policy must be approved by the Dean of Student Affairs before the due date.

All students administratively dismissed must satisfy payment of all fees and secure the written approval of the Dean of Student Affairs before re-admission to State Tech.

All credit hours carried that quarter will be assigned a "W" grade, if written approval for re-admission is not obtained.

FINANCIAL AID

Numerous sources of financial aid are available through State Tech and other agencies for qualified students. Among the available sources of funds are the following:

State Tech Temporary Student Loan: Any student with a proven financial hardship may apply for a State Tech Temporary Student Loan. The Student Affairs Office or the Financial Aid/Veterans Affairs Counselor will approve all State Tech loans. The student will execute a 31 day non-interest-bearing promissory note in the Business Office. Notes will provide only for maintenance fees. There is a very limited amount available for the first who complete the process.

Pell grant (BEQ): This federally funded grant is to be used as a basis for other grant programs. Applications can be obtained from high school counselors, financial aid counselors, or from Basic Grants, P.O. Box G, Iowa City, Iowa 52240.

Tennessee Guaranteed Student Loan: This is a low-interest loan plan that the student obtains through a bank or other lending agencies. As long as a student is at least part-time and in school, there is no accumulating interest. Applications may be obtained through the lender; then the Financial Aid/Veterans Affairs Counselor can complete the appropriate section.

State Board Work Scholarship: State Board Work Scholarships are available to students who are residents of Tennessee and who were in the top half of their high school graduating class. The recipient must fulfill a minimum work obligation and maintain a 2.5 GPA to be eligible for the scholarship. This scholarship covers tuition only.

Assistance: Assistance is available under Social Security, Veterans Administration, and Vocational Rehabilitation. Students should contact the Financial Aid/Veterans Affairs Counselor to apply.

College Work Study: This federally funded program provides part-time employment for students. To participate a student must be a full-time student and demonstrate financial need.

Supplemental Educational Opportunity Grant: Under this program Federal grants provide financial assistance to high school graduates who demonstrate exceptional financial need, enabling them to attend college.

Robert C. Hopkins Scholarship Fund is presented by the Oak Ridge-Knoxville Chapter of the American Society of Certified Engineering Technicians (ASCET). The recipient is chosen by the Oak Ridge-Knoxville chapter.
Contact the Financial Aid/Veterans Affairs Counselor in Student Affairs for further information about any programs.

SATISFACTORY PROGRESS

For the purpose of receiving financial assistance under Title IV of the Higher Education Act of 1965, as amended, satisfactory progress must be maintained for eligibility to continue receiving financial assistance. Satisfactory progress is defined as follows:

1. Financial aid recipients placed on Academic Probation will be considered to be on Financial Aid Probation and may continue to receive financial assistance. At the end of the probation quarter, if the academic standards have been met, they may be granted in the subsequent quarter.

2. Students who are suspended from the institute are ineligible for any financial assistance during the time of suspension. Suspended students who are readmitted to the institute will be ineligible for financial aid for that quarter and until such time as satisfactory progress has been established.

3. Students who receive a 0.0 quality point average for a quarter will not receive Federal or State financial assistance the following quarter. If a student is determined to have achieved satisfactory academic progress at the end of the subsequent quarter, then eligibility for financial assistance can be re-established for the following quarters.

4. Aid recipients who fail to complete two quarters in succession will not be eligible to receive any financial aid until one quarter has been completed with a minimum of six quarter hours passed.

5. Students will be evaluated at least at the end of each academic year to determine if measurable progress has been achieved in meeting the requirements of their degree or certificate.

6. Students who lose their eligibility for financial aid may present their documented case of mitigating circumstances (if any) to the Dean of Student Affairs or designee and if approved may be allowed to continue receiving aid.

7. Financial Aid recipients must maintain quarter hour progress toward graduation. If a student receives a BEOG for full-time attendance, three-quarters-time attendance, or half-time attendance, the following hours must be completed in that quarter:

   - Full-time — 9 quarter hours
   - Three-quarters-time — 6 quarter hours
   - Half-time — 6 quarter hours

Failure to complete the above will terminate financial aid for the following quarter of attendance. Satisfactory completion of the quarter hours progress and academic standards during a succeeding quarter may re-establish aid eligibility.

VETERANS

Veterans wishing to apply for educational benefits must submit transcripts from the high school/GED facility which granted a diploma or all accredited colleges and universities attended. These documents must be submitted within the first quarter, or further registration for courses will not be permitted.

The VA Form 22-1900, "Veterans Application for Program of Education or Training" must also be completed. The
veteran must submit the original of Form DD-214, a marriage record (if applicable), a divorce decree (if applicable) and birth records of each dependent child (if applicable). If benefits have previously been used for educational assistance, veterans must complete VA Form 22-1995. Any change in marital status or dependents since the veteran's last school attendance must be verified by marriage license, divorce decree, or birth certificate. The application and all supporting documents should be submitted to the Financial Aid/Veterans Affairs Office for processing at least eight weeks prior to the beginning of the quarter in which the Veteran wishes to attend. Advance pay is available to early applicants.

Proper application forms for disabled veterans, sons or daughters, widows or wives, widowers or husbands of veterans are available in the Financial Aid/Veterans Affairs Office.

Continuous Enrollment: The Veterans Administration also has a policy which allows those veterans attending school on a yearly basis (Fall, Winter, Spring, and Summer Quarters) to obtain their monthly checks with no interruptions or reduction in benefits due to school classes closing between quarters. However, days paid to veterans between quarters will be deducted from the total entitlement.

Veterans Administration Policy: VA Regulations forbid a veteran from repeating any course that has been passed with a "D" or above or any course that has been transferred from another school. Veteran students should not take any course that is not listed in the catalog under their curriculum even though they are not counting it for VA benefits. Veterans may not be certified for a course in which they have received an "I" grade, unless the "I" converts to an "F."

Deficiency Courses: Veterans may be paid for deficiency courses in math, reading, English, and chemistry only if the tests given through Developmental Studies Department or Appropriate ACT test scores indicate that such courses will aid the student in successfully completing the course work.

Advance Payment: Veterans who make application for admission and veterans benefits at least 30 days before the starting date of the quarter of attendance will receive at least one month's pay at the beginning of that quarter.

Advisors: Veterans should work closely with the advisor to adhere to the specified curriculum since courses not listed under a major curriculum are generally not payable by VA.

Additional information for veterans can be found in the Veterans Handbook available in the Financial Aid/Veterans Affairs Office.
Registration

ACADEMIC ADVISING

At the time of initial enrollment each student will be assigned a faculty advisor by each curriculum department head. The advisor's function is to assist with all academic considerations such as:

The technology in which the student will probably succeed on the basis of aptitude and experience.

The quarter hours of work which the student should carry.

The sequence of courses in a student's total academic program and the schedule of courses for a quarter.

Any special academic questions or problems which should not be handled by the faculty member teaching the course. Instructors will:

1. Assist advisees in registration.
2. Post office hours when they will be available to confer with advisees.
3. Have a personal conference with each advisee at least once during each quarter to insure the student's continued academic success.

4. Establish and maintain a file on each advisee containing the following information:
   a. Basic information regarding the student including prior education.
   b. Entrance test scores.
   c. Transcripts or copies of grade reports.
   d. An updated curriculum guide indicating courses taken and required.

PRE-REGISTRATION

Normally, a three-day pre-registration period is provided each quarter for students already enrolled. Evening students may pre-register in the evening.

Students pick up the next quarter's schedule, registration packets, and instruction sheets from the Records Office or other designated areas and receive their advisor's approval of their following quarter's schedule.

Students may complete all registration requirements during pre-registration week except the payment of maintenance fees. Payment dates for students who pay fees by cash or personal check will be announced during the pre-registration period. A student will not be officially enrolled until fees have been paid and a receipt has been issued by the Business Office. If tuition is being paid by an outside source, a student must still go to the Business Office on registration day or during the late registration period to get a receipt to be officially enrolled.

PRE-REGISTRATION AND SUSPENSION

Students who pre-register and are then suspended after grades for the quarter are submitted will be notified of a change of status as soon as possible, in most cases, before the next quarter's registration day.

REGISTRATION

Official Registration will be held (see Academic Calendar) at the beginning of each quarter. Payment of fees is required of all students at the time of official registration. Former students who have not attended for four or more quarters must apply for re-admission prior to official registration. All new freshmen and transfer students will be assigned advisors and counseled on their expected course of study. The minimum load for full-time attendance is twelve credit hours.
OFFICIAL ENROLLMENT

Credit will be granted only for courses in which the student is officially registered. Students who are officially registered for a class which they do not attend and do not officially drop or withdraw from will receive an "F" for the course. Students may be placed on the "hold list" for registration if any of the following applies:

1. Fees or other charges owed to the Business Office.
2. On academic suspension from previous attendance.
3. Financial Aid Program reimbursement due.
4. Failure to submit all required admission documents.
5. Previous disciplinary action taken by college. The proper action must be taken as indicated, or the Dean of Student Affairs should be contacted for further information before a student can be considered for re-admission.

SUMMARY OF PROCEDURES FOR ADDING, DROPPING, AND WITHDRAWAL

<table>
<thead>
<tr>
<th>Action</th>
<th>Time</th>
<th>Who Initiates</th>
<th>Approval Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add Class</td>
<td>Through last day to add</td>
<td>Student</td>
<td>1. Advisor</td>
</tr>
<tr>
<td>Withdrawal/ Drop Class</td>
<td>Through last day to drop</td>
<td>Student</td>
<td>2. Instructor</td>
</tr>
</tbody>
</table>

*Only if the withdrawal/drop involves all courses.

Dropping/withdrawing from a class: Forty-one calendar days are normally provided between official registration and the last day to drop/withdraw from classes as listed in the academic calendar. A grade of "W" will be recorded to reflect withdrawal from the course. The "W" grade indicates dropping of a class after the last date to add a course.

PROCEDURES FOR ADDING, DROPPING, AND WITHDRAWAL

Adding a class: The last day to add classes, set by the academic calendar, is generally five school days after the last day of official registration.
GENERAL INFORMATION

Requirements for an Associate Degree

The individual student is responsible for seeing that all requirements for graduation are met. Any exception to the requirements must be approved by the Dean of Instruction. As a candidate for the Associate of Engineering degree or Associate of Science degree, the student must satisfy the following requirements for graduation:

Minimum residence: The last 30 credits hours preceding graduation must be completed at State Technical Institute at Knoxville.

Minimum credit Hours: Each candidate must complete at least 90 credit hours to be eligible for the associate degree.

Minimum grade point average: A cumulative grade point average of at least 2.0 on all course work at State Tech is required for graduation.

Major studies: Completion of the curriculum for the major subject chosen is required for graduation.

Degree Application: Each prospective candidate must file an intent to Graduate Form during the quarter preceding the quarter in which he/she expects to graduate. Forms may be obtained in the Student Records Office.

Catalog option: The student must meet the requirements of (a) the current catalog or (b) the catalog effective at the time the student entered a program, provided graduation is within six years from the entrance date. Credits earned earlier than six years prior to graduation are subject to review and evaluation by the Dean of Instruction. This option does not exempt anyone from the general requirements of State Tech. General requirements are subject to change without notice.

Commencement: All students are required to participate in a formal graduation ceremony unless excused by the President of the Institute.

An annual commencement exercise is scheduled at the end of each Spring quarter for those certified as completing all requirements by their respective Department Chairperson during or before the spring quarter.

Other commencement exercises may be planned for completers who are certified after the summer or fall quarters, if there is a sufficient number of candidates to warrant a ceremony.
ACADEMIC STANDARDS
GENERAL GRADING POLICY

Interpretation of Letter Grades: A grade will be given in each course. The grade will report the student’s progress and achievement in the following:

A. Knowledge of the subject;
B. Ability to apply this knowledge; and
C. Work habits and practices.

Grades will be awarded on the four-point system as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Quality Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>4 per quarter hour</td>
</tr>
<tr>
<td>Above Average</td>
<td>3 per quarter hour</td>
</tr>
<tr>
<td>Average</td>
<td>2 per quarter hour</td>
</tr>
<tr>
<td>Below Average</td>
<td>1 per quarter hour</td>
</tr>
<tr>
<td>Failure</td>
<td>.0 per quarter hour</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>not computed</td>
</tr>
<tr>
<td>Incomplete</td>
<td>not computed</td>
</tr>
</tbody>
</table>

"I" reverts to an "F" if not completed by the end of the following quarter.

P  Passing not computed
NP Not Passing not computed
AU Audit not computed

Notes:
1. The only school-wide grading policy is that no final exam will count more than 50 percent of a student’s final grade.
2. Grades of W, I, P, NP, and AU do not affect grade point average.

Audit: A student who enrolls in classes on a non-credit basis as an auditor, is expected to attend class but does not receive a grade.

A student can change from audit to credit or from credit to audit only during the period when it is possible to add a course. No changes are permitted after this time. The auditor must inform the Registrar the class is being taken as an audit.
ACADEMIC HONORS AND AWARDS

The President will post, each quarter, a list of students attaining excellence in academic work. The President's Honor List will contain those students who completed 12 or more quarter hours whose GPA is 3.50 to 4.00.

The Dean's Honor List will likewise be posted and consist of those students who completed 12 or more quarter hours whose GPA is 3.00 to 3.49.

Students will be graduated with "Highest Honors" upon the attainment of a final cumulative grade point average of 3.5 or higher.

Students will be graduated with "Honors" upon the attainment of a final cumulative grade point average of 3.0 to 3.49.

Honors and Highest Honors will also be indicated on graduates' degrees.

The Valedictorian and Salutatorian awards for highest and second highest grade point averages will be presented at the graduation ceremonies at the end of each spring quarter.

Policy on Incompletes: The grade of "I" does not count as hours attempted in determining the grade point average for the quarter the student receives the "I." Instead, the grade replacing the "I" is computed into the grade point average at the end of the subsequent quarter. A grade of "I" must be made up by the end of the subsequent quarter or it reverts to an "F." The instructor, however, has the prerogative to limit the time allowed for completion to less than one quarter.

If a student receives a grade of "I" (incomplete) for a course and re-enrolls for the same course in the quarter immediately following the one in which she or he received the "I," the "I" reverts to an "F." However, if the student drops the course (second enrollment) on or before the last day to late register, the "I" grade will be reinstated. The student will have the remainder of the quarter to remove the "I" unless the instructor has set a date by which the course must be completed.

Students who receive grades of "I" are encouraged to complete these courses without re-enrolling in the same courses the following quarter.

REPETITION OF COURSES

Students are responsible for repeating courses failed. The most recent grade will be used for computing Grade Point Average. Courses may be repeated as often as the student feels necessary. However, veterans must conform to VA regulations.

GRADE REPORTS

Reporting of Final Grades: If a student's name appears on the final class list and the student has not been attending class, the student is still enrolled for the course and will receive a grade of "F."

STUDENT CLASS ABSENCES

Students are expected to attend all classes each time the class meets. When it becomes necessary for a student to be absent from a class, courtesy requires an explanation to the instructor in charge.

At the discretion of the instructor, excessive absences may affect the student's overall quarter grade.

Veterans are required to attend each class. Absences must be reported to the Veterans Affairs Office. VA educational benefits may be terminated for unexcused absences.

PROBATION AND SUSPENSION

Academic Probation and Suspension
will be based on the cumulative grade point average as follows:

<table>
<thead>
<tr>
<th>Total Hours Attempted</th>
<th>Minimum Required GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-24.9</td>
<td>1.50</td>
</tr>
<tr>
<td>25-50.9</td>
<td>1.75</td>
</tr>
<tr>
<td>51-above</td>
<td>2.00</td>
</tr>
</tbody>
</table>

A student whose grade point average falls below the minimum acceptable level in any quarter will be placed on academic probation for the subsequent quarter of enrollment. During the probationary quarter the student must attain the minimum acceptable cumulative grade point average, or a 2.0 average for that quarter, or be placed on suspension. The second occurrence may subject the student to a one-year suspension.

Probation and suspension of students in special training courses shall be left to the discretion of the institution.

**COLLEGE TRANSFER CREDIT**

Upon receipt of a college transcript, the Admissions and Records Office and the respective divisions will evaluate the courses taken. Transfer credit is awarded for those individual courses which are determined to be comparable to those offered at the State Technical Institute at Knoxville, provided a grade of “C” or better was made in the course. No credit is awarded for transfer courses containing less than 75 percent of the credit hours associated with the State Tech equivalent of the same course. Transferred credit will not be computed in a student’s GPA at State Tech.

Transfer credit completed more than six years prior to admission to State Tech must be approved by the Dean of Instruction.

**WAIVERS, INDEPENDENT STUDY, AND CREDIT BY EXAMINATION**

**Waiver of a Prerequisite**

Under special circumstances a prerequisite to a course may be waived by the head of the department in which the course is offered. The waiver is granted only when it is felt that the student has a fundamental knowledge of the prerequisite course, and his progress in the course requiring the prerequisite would not be impeded by by-passing the prerequisite course.

The waiver of prerequisite is not to be confused with a course waiver. If the prerequisite waived is a course required in the student’s curriculum, it must be completed or substituted (as below) before he receives the associate degree. No fee is required for a waiver of prerequisite.

**Course Waiver and Substitution**

Under special circumstances a course may be waived by the head of the department. The waiver is granted in instances where a course deletion or curriculum change necessitates the waiver. A course of equal or greater credit must be substituted and taken in lieu of any course waived. This stipulation in no way reduces the minimum quarter hours required for the associate degree. The substitute should be of the same or higher level as the course being waived. Primary consideration must be given to selecting a substitute course from the same department as the course waived.

No fee is required for a course waiver and substitution. A course waiver and substitution does not reduce the total credit hours or number of courses required for the associate degree. Likewise, no credit is awarded for a course waiver.
Independent Study

Registration for a course on an independent study basis, and subsequent granting of credit, may be accomplished for students who can prove to the satisfaction of the faculty of the Institute that they have the capability of mastering the content of any independent study course.

Permission to pursue a course on an independent study basis will be given only in instances where the student can demonstrate the ability to pursue the course through independent study and there is reasonable expectation that the course may be successfully completed. Permission to register for such a course must be granted by both the student's advisor and the course department head. The current maintenance fee per credit hour (non-refundable) must be paid to the Business Office for each course in which the student is enrolled on an independent basis; out-of-state and foreign national students must also pay the current tuition per credit hour (non-refundable). The total student maintenance fee and tuition cannot exceed the current published maximum for one quarter. Students are given up to six months from the date of fee payment to complete the course, including the examining process.

Examination(s) will be given by the instructor offering the independent study course as the student progresses through the assigned material. It will be the student's responsibility to meet with the instructor to arrange these examinations so that the course material is completed within the six-month period.

If the course is passed by an independent study, the student is awarded full course credit.

A student must register for Independent Study by completing the special "Independent Study Application Form."

Credit by Examination

A student may challenge any course offered at State Tech on the basis of past experience or training. Application for Credit by Examination must be approved by the Department Head.

The examination criteria will be determined by the Department Head and will normally consist of a comprehensive written test followed by an oral test. A laboratory exam may be given when necessary.

Credit by Examination will be given on a pass-fail basis only and will not be computed in the student's grade point average. A student may not attempt an examination for any course more than once.

A student must register for Credit by Examination and complete the necessary form.

A student may apply for Credit by Examination for no more than two courses at any given time. Credit by examination is counted as part of a student's load. The load of courses taken and courses in which one is seeking Credit by Examination may not exceed the maximum load which is allowed at any one time.

RECORD OF STUDENT WORK

Records of each student's grades are kept on file in the Admissions and Records Office. These are permanent and are frequently referred to for the purpose of supplying information to legitimate sources. In all cases, obligations to the Institute must be fulfilled before a transcript will be issued.

Change of Address

Any change of address and phone number should be reported immediately to the Admissions and Records Office.
STUDENT AFFAIRS AND ACTIVITIES

EDUCATIONAL RESOURCE CENTER

“Service is our most important product,” says the advertising slogan of one company. It could also be the slogan of the Educational Resource Center (ERC) because the main reason for its existence is to serve the informational needs of the students and faculty at State Tech. In its collection of books, periodicals, microfilm, audio-visual equipment, and materials, the ERC supports the various State Tech curricula and provides recreational reading. Periodicals, an important part of the library's collection, contain the most up-to-date information for new applications and advances in the technologies. The library also has a typewriter available for student use.

Audio-visual equipment is available in the Media Center of the ERC. In the development of instructional materials, the Media Center works hand-in-hand with institutional personnel by advising and consulting them in the various techniques for presenting instructional materials. Audio-visual assistance is also available to students upon request.

BOOKSTORE

Located in the student lounge at the main campus and in the lobby at Lonas Hall, the bookstores are designed to serve the students, faculty, and staff. The essential textbooks and supplies for each course offered at State Tech can be purchased in the bookstore. Class rings, State Tech jackets, calculators, personal items, and many accessories are also available for purchase.

Books in the same condition as when purchased are returnable with the proper receipt through the drop date. Supplies are non-returnable.

Graduating students must have cap and gown orders placed in the bookstore by March 1.

STUDENT AFFAIRS

State Technical Institute at Knoxville is aware that State Tech creates a new challenge for students. The Student Affairs Division at State Tech, responsible for assisting all students in meeting these challenges and providing the maximum development of each student, offers a number of services and activities to supplement the academic program. The Student Affairs Division coordinates the following services for students: admissions and orientation, recruiting, testing, counseling, financial aid (see page 14), veterans’ assistance (see page 15), career counseling and placement, records, insurance, activities, and matters involving student conduct. The department is staffed with full-time professional employees who are available to work with students in their areas of interest. The activities of the Division are coordinated by the Dean of Student Affairs.

Testing and Counseling

Testing, personal and career counseling, and personal effectiveness and career awareness workshops are provided by counselors through the Career/Life Resource Center. The purpose of these services is to assure that the student receives maximum results from these educational opportunities.

The aim of counseling is to help students gain a better understanding of their capabilities and potentialities, and to bring about a better relationship with the world around them so that they may become all they are capable of being.

Admissions/Recruiting

A positive, continuing program to provide potential students with current
information concerning State Tech is carried out by visits to all area high schools. Contact is made with potential students through letters, posters, advertising in local media, and liaison with local industries and civic organizations.

Current students are recognized as valuable resources for recruiting new students and are encouraged to make their friends aware of the opportunities afforded by State Tech.

Career Planning and Placement

Career Planning and Placement is a program designed to offer assistance and services central to career concerns and needs of all students and alumni of the State Technical Institute at Knoxville.

The service places emphasis on career planning and counseling. Students and alumni often take advantage of career counseling to explore opportunities within a given occupation or alternatives within a curriculum toward a career goal.

Students and alumni are assisted in their job search process, which includes on-campus interviews, job listings, employer recruiting literature, and a placement credentials service.

Admissions and Records

All past and current records on students at State Tech are maintained in the Admissions/Records Office. All requests for copies of information contained in a student's folder are made directly to the Admissions/Records Office. In accordance with the Family Educational Rights and Privacy Act of 1974, also known as the Buckley Amendment, this institution provides eligible students or their parents with the opportunity to review the student's education records and to seek correction of information contained in those records. Copies of college policy relating to information practices are obtained in the Admissions/Records Office.

Student Insurance

Since major care is occasionally needed on an emergency basis and on short notice, students are encouraged to consider the health and accident insurance policy issued by a private insurance company approved by State Tech. Details concerning this insurance are available in the Student Services Office or the Business Office.

Student Activities

There are several activities on campus for students. State Tech encourages extra-curricular activities which develop individual initiative, group leadership, and cooperation. Student organization and administration of student activities is a function of the Student Affairs Division.

Student Government Association

The purpose of the Student Government Association (SGA) is to promote and expand interest in student activities and to serve as an advisory group to both the administration of the school and the student body. The SGA is delegated authority to be responsible for certain specific matters affecting student affairs and represents student opinions in working with the administration toward the good of State Tech. The officers of SGA are the President, the Vice-President, Secretary, Treasurer, and Speaker of SGA. They are elected during the last four weeks of the Spring Quarter and serve for one year. All other members of the SGA are elected or appointed during the first four weeks of the fall quarter and serve one year. The Head of Student Services is the advisor, and the head or a designated representative must be present at all official meetings of the SGA.
Clubs

Honor, social, and professional clubs may be organized by the SGA. Organizations not chartered by the SGA will not be recognized as part of the Institute. Those chartered must have the following elected officers: president, vice-president, secretary, treasurer, club reporter, and the representative to the SGA.

The SGA will determine if sufficient interest exists to form or to continue such a club. Each club will have a faculty advisor.

Included among the clubs on campus are student chapters of the American Society of Certified Engineering Technicians (ASCET), the Data Processing Managers Association (DPMA), the Student Managers Association (SMA), and the Psi Delta Chapter of Tau Alpha Pi National Honor Society. These clubs sponsor field trips to local businesses and industries and give students the opportunity to meet and talk with working technicians and business people.

Student Conduct

All students are expected to maintain acceptable standards of personal conduct and honesty. Any student whose conduct is considered harmful to the rights of others or to the reputation of the college shall be subject to suspension or expulsion. Any student who is expelled or suspended will receive written notification stating the exact reason(s) for disciplinary action. The student is entitled to a hearing before the Academic Standards and Discipline Committee. A student wishing to have a case reviewed should contact the Dean of Instruction. The Dean of Instruction will notify the student of the time and place of the review proceedings and will call a meeting of the committee to hear the student's appeal of disciplinary action. The finding of the committee will be given to the student in writing.

The following areas of misconduct are identified to clarify what constitutes unacceptable student conduct at the Institute. Misconduct may be grounds for suspension or expulsion.

1. A student shall not by use of violence, force, noise, coercion, threat, intimidation, fear, passive resistance, or other conduct intentionally cause a disruption or obstruction of any lawful mission, process, or function of the school.

2. A student shall not intentionally cause, or attempt to cause, damage to the school and/or private property or steal, or attempt to steal, school and/or private property.

3. A student shall not intentionally cause, or attempt to cause, physical injury or intentionally behave in such a way which could cause physical injury to a school employee, another student, or other persons not employed by the school.

4. A student shall not knowingly possess, handle, or transmit any object that can reasonably be considered a weapon.

5. A student shall not knowingly possess, use, transmit, or be under the influence of any narcotic drug, hallucinogenic drug, amphetamine, barbiturate, marijuana, alcoholic beverage, or intoxicant of any kind. (Exception: prescription from a registered physician.)

6. A student shall not engage in gambling in any form.

More details on student conduct requirements can be found in the 1981-82 Student Handbook, "Technicalities."
BANKING AND FINANCE
As the price of money and the need for financial services have grown in the past decade, competition within the industry has brought about many changes in financial institutions. A need for better-educated bank personnel and for people trained for new jobs in public relations, bank marketing, and branch management has developed. The Banking and Finance Associate of Science Degree program is designed to meet these needs.

Theories and principles of banking are taught at a conceptual level in the Bank Management and Principles of Banking courses. Opportunities for skill development in communications, machine usage, accounting, and office operations are included. In all courses the latest developments in banking-related technology and regulations are used. One important overall objective is to instill a person-to-person approach to working in the banking community by practical education in supervision, personnel administration, human relations, and effective communications.

The curriculum provides a sound background for persons seeking a career in the banking industry. The American Institute for Banking (AIB) has assisted in developing this curriculum. The wide range of courses covers nearly every facet of banking and bank operation.

The Banking and Finance curriculum is an Associate of Science degree program with a wide range of educational offerings covering nearly every facet of banking and bank operation. A basic background in English is given to emphasize oral and written communication as it relates to banking. Mathematics is also directed specifically to needs of banking workers. Social studies is geared toward management, human relations, economics, law and psychology — all as they relate to the world of banking.

These basic courses are applied to more specific course content areas such as accounting, business finance, principles of banking, credit administration, marketing, federal reserve systems, and federal regulations.

TYPICAL POSITIONS OPEN TO BANKING AND FINANCE GRADUATES
Bank Public Relations
Marketing
Trust Services
Bank Operations
Correspondent Banking
Personnel Management
### BANKING AND FINANCE Curriculum

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*BK 200 hours not included in totals. See course description.*
BUSINESS DATA PROCESSING

With the continuing emphasis on computer usage in all phases of business and science, the role of the computer programmer is gaining in importance. The college strives to teach students to become competent computer programmers, preparing them for rewarding careers in data processing.

As the curriculum name implies, emphasis is placed on business applications of computer programming. Considerable course time is spent learning the computer languages most applicable to business environments. Students also are taught basic business fundamentals in order to understand better the underlying problems of business data processing. These business courses, together with foundation courses in English, mathematics, and statistics, will enable the student to communicate effectively with others in a data processing environment.

A computer program is usually developed via a three-part procedure: careful evaluation of the problem, analysis of alternate solutions, and a final implementation. Therefore, analytical tools are introduced to students to aid in this procedure. With these tools the student can assist in the design and development of an automated system.

Students completing the course outlined in the data processing curriculum can expect to find careers in diversified areas such as manufacturing enterprises, accounting firms, hospitals, government installations, universities, and many other public and private concerns. The well-trained data processing technician has a wide horizon of job opportunities.

TYPICAL POSITIONS OPEN TO DATA PROCESSING TECHNICIANS

Applications programmer — is employed by a computer user and converts a problem into a set of directions for a computer to solve.

Systems representative — is usually employed by a computer manufacturer and provides customer programming support and normally travels from installation to installation.
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#### Course Requirements

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**Total Credit Hours: 10**

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**Total Credit Hours: 12**

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**TOTAL Credit Hours: 106**
COMPUTER ACCOUNTING TECHNOLOGY

A graduate in computer accounting technology is a technical assistant to both the accounting department and the data processing department and, as such, must be capable of speaking the language of the accountant and the computer technician.

Specifically, the computer accounting technician acts as a liaison between the two departments by transposing information collected by the accounting department into a language understood by the data processing personnel. By interacting with these departments, the computer accounting technician can facilitate the collection of raw data into financial statements that may be used by the accountant and/or management in the decision-making process. By using the computer, technicians not only perform computations usually done by bookkeepers or junior accountants (thereby reducing costs of personnel) but, more importantly, can perform them much faster. This function has a two-fold effect on the business. First, the technician is free to perform more important duties such as the collection of raw data. Secondly, the data upon which management bases its decisions is more current.

With computers becoming more accessible to companies which have regional or local markets, the demand for competent technicians will increase appreciably. As a result of this growth potential, graduates who possess the necessary skills to fill positions as computer technicians will find new and exciting job opportunities limited only by their own creativity.

The Managerial Accounting specialization is designed to provide the student with a firm base in accounting principles and fundamentals of management. Typical course work areas include accounting, accounting theory and practice, cost accounting, taxation, finance, personnel management, labor relations, business law, and supervisory development.

TYPICAL ENTRY LEVEL POSITIONS OPEN TO COMPUTER ACCOUNTING TECHNICIANS

Accounting technician — assists the chief accountant in the implementation of data collection methods to utilize better the advantage of the data processing department.

Programmer — assists the data processing department in converting the data collected by the accounting department into a language acceptable to the computer.

Analyst trainee — assists the data processing department in retrieving and compiling data stored in the computer into financial statements understood and usable by the accounting department.

MANAGERIAL ACCOUNTING SPECIALIZATION

Management trainee — entry level position in the accounting department. This technician has skills to perform duties in general accounting or cost accounting and related areas of activity which require an understanding of accounting principles.
## Computer Accounting Technology Curriculum

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## Managerial Accounting Specialization Curriculum

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*Must be selected from accounting courses. Subject to approval by department head.

## PROGRAMMING SPECIALIZATION

### Curriculum

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<th>Lab</th>
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**Total** 91 27 101

*Must be selected from accounting courses. Subject to approval by department head.*
### COMPUTER ACCOUNTING

**Course Requirements**

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<td>4</td>
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<tr>
<td>BU 203 Taxation</td>
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<tr>
<td>BU 221 Intermediate Accounting I</td>
<td>3</td>
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<tr>
<td>BU 222 Intermediate Accounting II</td>
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<td>BU 231 Cost Accounting I</td>
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<td>&quot;BU Accounting Elective&quot;</td>
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**BUSINESS**

| BU 124 Business Law | 4            |
| BU 216 Business Finance | 3           |

**DATA PROCESSING**

| DP 100 Data Processing Techniques | 4            |
| DP 101 Introduction to Data Processing | 3            |
| DP 121 Computer Programming RPG II | 6            |
| DP 120 BASIC                     | 4            |

**ECONOMICS**

| EC 101 Principles of Economics I | 3            |

**ENGLISH**

| EN 1150 Business Communication I | 3            |
| EN 1151 Business Communication Lab | 1            |
| EN 116 Business Communication II | 3            |
| EN 121 Oral Communication        | 3            |

### INDUSTRIAL MANAGEMENT

**Course Requirements**

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<td>MA 141 Business Mathematics I</td>
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<td>MA 142 Business Mathematics II</td>
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<tr>
<td>MA 143 Business Mathematics III</td>
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**ELECTIVES**

- Social Science: 3 credits
- General: 3 credits

**TOTAL**: 89 credits

### PROGRAMMING SPECIALIZATION

**Course Requirements**

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<thead>
<tr>
<th>PROGRAMMING SPECIALIZATION</th>
<th>Credit Hours</th>
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<td>DP 221 Systems Design and Development</td>
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<td>DP 131 Computer Programming - COBOL</td>
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<td>DP 232 Computer Programming - COBOL-Advanced</td>
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**MANAGERIAL ACCOUNTING SPECIALIZATION**

**Course Requirements**

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<th>Credit Hours</th>
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<td>IM 225 Labor Relations</td>
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<td>IM 231 Supervisory Development I</td>
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<td></td>
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MARKETING TECHNOLOGY

The curriculum in Marketing Technology is designed to prepare students to be marketing technicians, providing the requisite skills for careers with companies engaged in the marketing of consumer and industrial goods and their distribution by manufacturers, wholesalers, and retailers. There are several courses available that would prepare graduates to effectively organize and operate a small business. Other potential employment opportunities include positions in industrial and consumer sales, advertising and promotion, retail buying and merchandising, marketing research, and marketing information systems. There is an optional area of concentration of courses available in each of the above areas of study. During the two-year program, students are introduced to the four basic requirements for success in business: technical skills, marketing know-how, knowledge of materials, and the language of business. The success and development of marketing graduates is limited only by their own initiative and ability to use the skills learned.

The courses required for completion of the A.S. degree in Marketing Technology at State Technical Institute at Knoxville will be accepted toward fulfillment of the requirements of a B.S. degree in Distributive Education at the University of Tennessee upon approval by the Distributive Education Department. This additional degree would allow students to further develop their understanding of marketing and distribution activities and also become certified to teach in this field, should they so desire.

TYPICAL POSITIONS OPEN TO MARKETING TECHNICIANS

Sales representative — acts as the company’s agent in contacting potential customers, presents the product to that customer, promotes the sale, and finally uses the tools of marketing to satisfy the customer’s expectations.

Assistant buyer — assists buyers in many of the tasks associated with the buying function, placement of orders, inventory control, working with sales and resource personnel, and tracking of merchandise.

Manager or manager trainee — accepts the responsibilities of “being in charge” of the operation. There are many levels of management which are available to the marketing technician, and attainment of promotion is limited only to the trainee’s abilities and efforts.

Inventory control clerk — has responsibilities for the regulation of incoming and outgoing merchandise inventory and other materials used in the business. Also responsible for maintaining quantity and price levels of stock.

Industrial purchasing agent trainee — aids in determining what products a company should make, what components or parts of these products the company should manufacture, and what components or parts should be purchased from outside suppliers.

Market research assistant — has the responsibility of systematically gathering, recording and analyzing primary and secondary data about problems relating to the marketing of goods and services.

Advertising media sales representative — may represent an ad agency, magazine or newspaper publishing company, radio or television station, or outdoor advertising company in planning, pricing and scheduling advertising for businesses.
## MARKETING TECHNOLOGY Curriculum

### FIRST QUARTER

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Per Week</th>
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<tbody>
<tr>
<td>BU 121 Principles of Accounting I</td>
<td>3 Class, 3 Lab, 4 Credit Hours</td>
</tr>
<tr>
<td>DP 101 Introduction to Data Processing</td>
<td>3 Class, 3 Lab, 3 Credit</td>
</tr>
<tr>
<td>EN 1150 Business Communication I</td>
<td>3 Class, 0 Lab, 3 Credit</td>
</tr>
<tr>
<td>EN 1151 Business Communication Lab</td>
<td>0 Class, 3 Lab, 1 Credit</td>
</tr>
<tr>
<td>MA 141 Business Mathematics I</td>
<td>4 Class, 0 Lab, 4 Credit</td>
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<tr>
<td>SC 101 Human Relations</td>
<td>3 Class, 0 Lab, 3 Credit</td>
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**TOTAL:** 17 Class, 3 Lab, 18 Credit Hours

### FOURTH QUARTER

<table>
<thead>
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<th>Hours Per Week</th>
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<tr>
<td>BU 124 Business Law I</td>
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<tr>
<td>BU 216 Business Finance I</td>
<td>3 Class, 0 Lab, 3 Credit</td>
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<tr>
<td>BU 201 Principles of Management</td>
<td>4 Class, 0 Lab, 4 Credit</td>
</tr>
<tr>
<td>MT 211 Advanced Marketing</td>
<td>3 Class, 0 Lab, 3 Credit</td>
</tr>
<tr>
<td>MT 101 Principles of Selling</td>
<td>3 Class, 3 Lab, 4 Credit</td>
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**TOTAL:** 65 Class, 18 Lab, 71 Credit Hours

In addition to the core curriculum which consists of 71 credit hours, there are 18 courses listed below from which to choose a minimum of 30 credit hours during the final two quarters of study. This allows students to concentrate in one of four fields of study. Each field is indicated below with an abbreviated letter code placed before each course recommended for that field.

**A - Advertising**

**I - Marketing Information Systems**

**R - Retailing**

**S - Industrial Sales**

### THIRD QUARTER

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Per Week</th>
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<tbody>
<tr>
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<td>EC 102 Principles of Economics II</td>
<td>3 Class, 0 Lab, 3 Credit</td>
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<td>EN 121 Oral Communication</td>
<td>3 Class, 0 Lab, 3 Credit</td>
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<tr>
<td>MA 143 Business Mathematics III</td>
<td>4 Class, 0 Lab, 4 Credit</td>
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<tr>
<td>MT 100 Introduction to Marketing</td>
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**TOTAL:** 16 Class, 6 Lab, 18 Credit Hours

### HOURS PER WEEK

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<td>DP 221 Systems Design and Development</td>
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<td>IM 236 Information Systems for Management</td>
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<td>IM 231 Supervisory Development</td>
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<td>I</td>
<td>S A MT 213 Market Research</td>
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**MARKETING TECHNOLOGY Course Requirements**

**Credit Hours**

**ECONOMICS**

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<td>DP 221</td>
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Average credit hours required for all marketing graduates regardless of specialization total 97.
MID-MANAGEMENT TECHNOLOGY

Management for small organizations and for the lower and middle levels of larger organizations is a relatively new concept. In these positions management theories and principles find practical application. Managers are needed in a wide variety of organizations including education, health care, service, retail, government, and manufacturing.

Basic understanding of theory and principle is essential, but the emphasis in mid-management is on practical applications for small businesses and the lower levels of larger businesses. Management is exciting and challenging, and the courses include case studies and problems to give students the feel of real situations.

Experience is the best teacher in mid-management as in most other fields. But systematic study of the techniques and tools used in management is basic to experience learning. Familiarity with the methods developed and used in all kinds of organizations is the key to becoming a part of the management system. On-the-job experience meeting demands, making decisions, executing plans, devising strategies, then becomes an effective and rapid means to accomplishment and success.

Some of the specific topics covered in the mid-management courses are: leadership, supervision, group dynamics, communications, union relations, organizational change, planning, controlling, and motivation. These are all people-oriented activities. Topics dealing with money (economics, finance, costs), materials (handling, transportation, quality control), and machines (plant layout, time and motion study) are given an important place in the curriculum.

The two-year Management Associate of Science degree is directed toward students who wish to develop or improve their supervisory skills. The program will be especially interesting and helpful to mature students who are continuing their education on a part-time basis.

TYPICAL POSITIONS OPEN TO MID-MANAGEMENT GRADUATES
Personnel Management
Office Supervision
Counselor
Management of a Small Business
Retail Management
Manufacturing
Foreman
Production Planning and Control
Materials Handling
Plant Layout
Production Planner
### MID-MANAGEMENT TECHNOLOGY

**Curriculum**

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### BANKING SPECIALIZATION

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**TOTAL** 100 12-21 104-107

*Management Departmental Electives approved by Department Head.*
## INDUSTRIAL SPECIALIZATION Curriculum

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**TOTAL** 9636-45 109-112

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## MANAGERIAL SPECIALIZATION Curriculum

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**TOTAL** 9715-33 102-108
### MID-MANAGEMENT TECHNOLOGY

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#### INDUSTRIAL MANAGEMENT

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### BANKING SPECIALIZATION

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### INDUSTRIAL SPECIALIZATION

**Course Requirements**

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### MANAGERIAL SPECIALIZATION

**Course Requirements**

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<td>IM 235</td>
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<td>IM 237</td>
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<td>Plant Layout and Materials Handling</td>
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<tr>
<td>IM 222</td>
<td>Statistical Quality Control</td>
<td>4</td>
</tr>
<tr>
<td>IM 223</td>
<td>Engineering and Economic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>IM 224</td>
<td>Methods and Time Measurement</td>
<td>4</td>
</tr>
<tr>
<td>IM 232</td>
<td>Production Planning and Control</td>
<td>4</td>
</tr>
</tbody>
</table>

**TOTAL** 29
BUSINESS TECHNOLOGIES
DIVISION
Course Descriptions

BANKING AND FINANCE

BK 101 Principles of Bank Operations
4 Credits
4 Class Hours
The fundamentals of bank functions are presented in a descriptive fashion so that the beginning student may view the banking profession in a broad and operational perspective. The descriptive orientation is intentional. Banking is increasingly dependent upon personnel who have the broad perspective so necessary for career advancement.

BK 106 Principles of Banking
4.5 Credits
4.5 Class Hours
Touches on nearly every aspect of bank functions including the language and documents of banking, check processing, teller function, trust services, bookkeeping, loans and investments.

BK 110 Economics
4.5 Credits
4.5 Class Hours
Emphasis is placed on theory and issues, and covers both micro- and macro-economics and devotes considerable time to current developments in national and international arenas.

BK 121 Credit Administration
4 Credits
4 Class Hours
This course, directed toward the executive level, concerns itself with a statement and a discussion of factors influencing and determining loan policy. Methods of credit investigation and analysis, credit problems, and regular as well as unusual types of loans are discussed.

BK 122 Accounting
4.5 Credits
4.5 Class Hours
Presents more advanced concepts and techniques including departmentalized accounting, the partnership accounting cycle, branch and home office accounting, corporation accounting, budgeting, reporting, and statement analysis. A final view of data processing completes this course.

BK 131 Installment Credit
4 Credits
4 Class Hours
In this course, the techniques of installment lending are presented concisely.

Emphasis is placed on establishing the credit, obtaining and checking information, servicing the loan, and collecting the amounts due. Each phase of a bank's installment credit operation is carefully scrutinized. Other topics discussed are inventory financing, special loan programs, business development and advertising, and the public relations aspect of installment lending.

BK 200 Practicing Management Theory
4 Credits
4 Class Hours
This course integrates the basic functions of management-planning, organizing, directing, and controlling — with new insights from the behavioral sciences. The establishment of objectives and the implementation of strategies and policies to accomplish these objectives will be studied. This course may be substituted for any of the Banking courses except BK 101 and BK 111.
Prerequisite: Second Year Student or Permission of Department Head

BK 201 Management of Commercial Bank Funds
4 Credits
4 Class Hours
This course deals with those necessary
principles from which the student can derive an adequate philosophy of funds management. Differences between practices in large banks and smaller institutions are discussed. The importance of funds management as the catalyst that brings together policies in the areas of loans, deposits, investments, capital, and their interrelationship is stressed.

Prerequisite: BK 101

BK 203 Money and Banking
4 Credits
4 Class Hours
This course stresses the practical aspects of money and banking and emphasizes the basic monetary theory needed by the banking student to apply his knowledge to his particular job. Historical treatment has been kept to a minimum. Emphasis is placed on such problems as economic stabilization, types of spending, the role of gold, limitations of central bank control, government fiscal policy, balance of payments, and foreign exchange, showing their repercussions on the banking industry in affecting yield curves and the structuring of portfolios.

BK 204 Law and Banking
4.5 Credits
4.5 Class Hours
An introduction to basic American law, Law and Banking presents the rules of law which underlie banking. Topics covered include jurisprudence, the court system, contracts, property, crimes, and agency. The text concentrates on the Uniform Commercial Code in its coverage of sale of personal property, commercial paper, bank deposits and collections, documents of title, and secured transactions.

Prerequisite: BK 101

BK 231 Federal Reserve System
4 Credits
4 Class Hours
The operations and policies of the Federal Reserve are examined during critical periods over the past 60 years. The approach taken is topical rather than chronological, thereby enabling students to compare and contrast Federal Reserve policies dealing with similar problems at different periods of time. Attention is given to international monetary affairs and economic developments affecting the American fiscal system.

Prerequisite: BK 203

BK 241 Federal Regulations of Banking
4 Credits
4 Class Hours
This course provides a comprehensive treatment of the "why" and "what" of federal banking regulations. It will provide an understanding of the federal
regulatory system and the industry’s relationship to the Federal government.  
Prerequisite: BK 203

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BU 203</td>
<td>Taxation</td>
<td>3</td>
<td>Class Hours</td>
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<tr>
<td>BU 204</td>
<td>Advanced Taxation</td>
<td>3</td>
<td>Class Hours</td>
</tr>
<tr>
<td>BU 205</td>
<td>Auditing</td>
<td>3</td>
<td>Class Hours</td>
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**BUSINESS**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BU 116</td>
<td>Personal Financial Management</td>
<td>4</td>
<td>Class Hours</td>
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<td>Lab Hours</td>
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This course provides an understanding of the fundamental aspects of managing one’s personal finances. Emphasis is placed on setting personal financial goals, preparing personal financial statements, protecting income and assets, and setting up long range investment programs.

**BU 121 Principles of Accounting I**  
4 Credits  
3 Class Hours, 3 Lab Hours  
A course which includes basic principles of accounting theory and practice, analysis and recording of business transactions, business documents, books and controlling accounts, adjusting and closing entries and payroll accounting.  
Co-requisite: MA 141

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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BU 122</td>
<td>Principles of Accounting II</td>
<td>4</td>
<td>Class Hours</td>
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<td>Lab Hours</td>
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A course which includes merchandise inventory, deferrals and accruals, fixed assets, systems and controls, and partnership and corporate accounting.  
Prerequisite: BU 121

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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BU 123</td>
<td>Principles of Accounting III</td>
<td>4</td>
<td>Class Hours</td>
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<td>Lab Hours</td>
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3 Class Hours, 3 Lab Hours  
A course which includes cost accounting systems, budgetary control and standard costing, and relationship for management, management reports and special analyses, funds statement, and cash flow and financial statement analysis.  
Prerequisite: BU 122

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<th>Course Code</th>
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<th>Credits</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BU 202</td>
<td>Accounting Systems</td>
<td>3</td>
<td>Class Hours</td>
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</table>

A study of the integration of information systems concepts with the basic accounting process, including an in-depth analysis of these processes in various computer environments.  
Prerequisite: BU 123  
DP 121, DP 221

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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BU 209</td>
<td>Managerial Accounting</td>
<td>3</td>
<td>Class Hours</td>
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</table>

Designed to aid students who expect to become managers; provides information concerning the meaning of the accounting figures, terms and techniques of analysis; provides application of technique in making general decisions and judging performance.
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<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Hours</th>
<th>Description</th>
<th>Prerequisite(s)</th>
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<tbody>
<tr>
<td>BU 211</td>
<td>Payroll Procedures</td>
<td>3</td>
<td></td>
<td>This course teaches procedures followed in handling the payroll. These will include working with time cards, payroll records, payroll deductions, employee earning records, paying employees, and accounting for payroll funds.</td>
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<td>Class</td>
<td>3</td>
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</tr>
<tr>
<td>BU 216</td>
<td>Introduction to Finance</td>
<td>3</td>
<td></td>
<td>The subject matter surveys the whole field of finance, both public and private.</td>
<td>BU 122, MA 141</td>
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<td>Class</td>
<td>3</td>
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<tr>
<td>BU 217</td>
<td>Finance II</td>
<td>3</td>
<td></td>
<td>A continuation of BU 216 to include capital markets, company valuation, merger, reorganization, and liquidation.</td>
<td>BU 216</td>
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<td>Class</td>
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<tr>
<td>BU 221</td>
<td>Intermediate Accounting I</td>
<td>3</td>
<td></td>
<td>A study of accounting records, end-of-period procedures, net income concepts, corrections of prior periods, and the capital structure of a business.</td>
<td>BU 123</td>
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<td>Class</td>
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<tr>
<td>BU 222</td>
<td>Intermediate Accounting II</td>
<td>3</td>
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<td>This course covers such topics as investments, plant and equipment, intangible assets, long-term liabilities, and paid-in capital.</td>
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<td>Lab</td>
<td>4</td>
<td></td>
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<tr>
<td>BU 231</td>
<td>Cost Accounting I</td>
<td>3</td>
<td></td>
<td>A study of the fundamentals of cost accounting within an industrial organization. The accounting functions relative to materials, labor, overhead and marketing are treated in detail.</td>
<td>BU 123</td>
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<td>Class</td>
<td>3</td>
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<tr>
<td>BU 232</td>
<td>Cost Accounting II</td>
<td>3</td>
<td></td>
<td>A continuation of Cost Accounting I (BU 231) in which process and standard cost systems are developed in detail with emphasis directed toward the budgeting and managerial control functions.</td>
<td>BU 123</td>
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<td>Lab</td>
<td>3</td>
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<tr>
<td>BU 235</td>
<td>Advanced Cost Accounting</td>
<td>3</td>
<td></td>
<td>Continuation of first two courses in Cost Accounting. Using cost information in decision-making by management; cost analysis.</td>
<td>BU 231-2</td>
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<td>Class</td>
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<tr>
<td>BU 241</td>
<td>Not-for-Profit Accounting</td>
<td>3</td>
<td></td>
<td>A study of fund accounting and of methods used in accounting by governments, hospitals, and other non-profit organizations.</td>
<td>BU 123</td>
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<td>Class</td>
<td>3</td>
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<tr>
<td>BU 251</td>
<td>Internal Auditing</td>
<td>3</td>
<td></td>
<td>Methods and procedures employed by in-house auditor and preparation of reports are analyzed for top management.</td>
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<td>Class</td>
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<tr>
<td>BU 261</td>
<td>Practical Application of Accounting</td>
<td>3</td>
<td></td>
<td>Application of theory to actual practice in simulated work situations. Practice in recording, processing, summarizing financial information.</td>
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<td>Class</td>
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</tbody>
</table>
BU 263 Internship 1-4 Credits
Actual work experience in industry or business. One credit for each sixty hours worked with maximum of 4 credits.
Prerequisite: BU 123 and permission of department head.

DATA PROCESSING

DP 100 Data Processing Techniques 3 Credits
3 Class Hours, 3 Lab Hours
This course introduces students to the computing environment of State Tech while covering the use of certain invaluable data processing "tools": flowcharting, and structured or modular programming techniques.

DP 101 Introduction to Data Processing 3 Credits
3 Class Hours
Fundamentals of data processing vocabulary, basic description of hardware and its uses, a history of hardware development, and a survey of the functions of software. Attention is given to business data processing applications.

DP 102 Computer Programming for Engineering Technology 3 Credits
3 Class Hours, 3 Lab Hours
An introduction to computer systems and applications. Survey of computer technology history and relationships of the computer and society in the future. Flowcharting and programming concepts are taught through use of the BASIC programming language.

DP 105 Operating Systems I 4 Credits
3 Class Hours, 3 Lab Hours
A closer look at the DEC operating system. Utility programs, binary, octal, and hexadecimal arithmetic, DCL commands, editors, libraries, and other selected topics will also be covered.

DP 110 Basic Programming 4 Credits
3 Class Hours, 3 Lab Hours
A basic introduction to the BASIC language, including compilation, structure of programs, compilation, and error correction.

DP 111 Assembler Programming 4 Credits
3 Class Hours, 3 Lab Hours
The study and development of a manufacturer's assembly language. The student will write and debug programs in this language and also be capable of employing the language in a total programming system. The principles of debugging and core-dump reading will be given major emphasis.
Prerequisite: DP 120

DP 112 Advanced Assembler Programming 4 Credits
3 Class Hours, 3 Lab Hours
Continuing study of ASSEMBLER language with emphasis placed upon applications to systems programming. Topics covered include subroutine linkage, organization and access methods of sequential and indexed sequential files.
Prerequisite: DP 111

DP 120 Basic Programming (RPG) 4 Credits
3 Class Hours, 3 Lab Hours
BASIC is chosen as the first computing language because it is so easy to learn. The full range of BASIC statements will be explored including those used for various file structures, and file handling techniques.
Prerequisite: DP 105

DP 121 Computer Programming (RPG) 4 Credits
5 Class Hours, 3 Lab Hours
The study and development of programming capabilities in the business computer language Report Program Generator II (RPG II). Includes program logic, coding techniques, documentation, tape and disk file handling con-
cepts, tables and arrays, advantages and disadvantages of RPG as a high-level language in small and medium scale installations.

**DP 131 COBOL Programming I**
5 Credits
4 Class Hours, 3 Lab Hours
Experience in using programming techniques with a high level language. Students will be required to program, debug, and test specified business oriented problems using COBOL.
Prerequisite: DP 120

**DP 201 FORTRAN Programming**
4 Credits
3 Class Hours, 3 Lab Hours
The study and development of the business applications of Fortran IV, including input-output formatting, loop control, arithmetic statements, arrays, tables, and subprograms.
Prerequisite: DP 111

**DP 213 Data Communication**
4 Credits
3 Class Hours, 3 Lab Hours
An introduction to the hardware and software systems which support today's on-line real-time business systems. Time-sharing, multi-programming, and multi-processing systems are investigated as they relate to data communications systems.
Prerequisite: DP 221, DP 111

**DP 221 Systems Design and Development**
3 Credits
3 Class Hours
A study of the overall computer based systems analysis and design process, information problems of business organization and the interrelationship of functions, nature of business problem isolation and definition, and initial phase of systems analysis and evaluation.
Prerequisite: DP 111

**DP 224 File Management Concepts**
4 Credits
3 Class Hours, 3 Lab Hours
A survey of data base concepts, file structure, file handling, DEC's Record Management Service (RMS), data dictionaries, and other selected topics.
Prerequisite: DP 111

**DP 226 Advanced Operating Systems**
3 Credits
3 Class Hours
An overview of the different operating systems of different manufacturers. An introduction to the different components of an operating system such as job control, compilers, assemblers, supervisors, utilities and libraries.
Prerequisite: DP 111

**DP 232 COBOL Programming II**
4 Credits
3 Class Hours, 3 Lab Hours
A course which introduces advanced programming techniques using the COBOL language. Students will be expected to use disk files and random access techniques to solve programming problems.
Prerequisite: DP 131, DP 111

**DP 234 Advanced Programming Applications**
8 Credits
3 Class Hours, 15 Lab Hours
This course is designed to afford students practical work experience with a local data processing installation. The requirements include: approval of work situation by data processing department chairperson, satisfactory work experience as reported by cooperating data processing manager and completion of prescribed programming or systems application related to commercial data processing.
Prerequisites: Completion of all course work through fifth quarter and departmental approval.
ECONOMICS

EC 101 Principles of Economics
3 Credits
3 Class Hours
A course which includes a presentation of basic economic concepts including types of business organization, supply and demand determination, market structure classification, profit maximization, and microeconomic role in government.

MID-MANAGEMENT

IM 116 Management for First Line Supervisors
3 Credits
3 Class Hours
This course introduces first-level supervisors to the duties of supervision. It is designed to assist personnel in improving job performance and in preparing for advancement.

IM 124 Business Law
4 Credits
4 Class Hours
Principles of law as applied to business transactions, including contracts, employment, negotiable instruments, and personal property.

IM 125 Business Law II
3 Credits
3 Class Hours
Principles of law as applied to business transactions, including bailments, transportation, sales, insurance, suretyship and guaranty, and partnership. Prerequisite: BU 221

IM 131 Methods Analysis
3 Credits
3 Class Hours
The application of the "questioning attitude" is studied in search for better manufacturing methods and job procedures.

IM 132 Personnel Management
5 Credits
5 Class Hours
The course is designed to prove an understanding of the basic functions of management used to build and work with an effective and satisfied group of people. Attention is focused on the scope, guiding principles, and background of personnel management.

IM 201 Principles of Management
4 Credits
4 Class Hours
This course undertakes the study of management by analyzing the basic managerial functions and relating these to the manager's total environment. Differing management theories are researched along with the total organization and its role in present society. Management is approached through a component breakdown with each area being researched in detail.

IM 211 Motion and Time Study
4 Credits
3 Class Hours, 3 Lab Hours
The application of time study, standard data development and formula construction, and work sampling principles and studies will be discussed.

IM 212 Wage and Salary Administration
4 Credits
4 Class Hours
This course covers the methods used in developing a job evaluation program and the various ways of making wage payments. Consideration is given to the maintenance and control of established programs.

IM 221 Plant Layout and Materials Handling
4 Credits
3 Class Hours, 3 Lab Hours
The study of equipment maintenance, utilization of space and arrangement of stock, machines and aisleways is in-
cluded in this course. The course surveys material-handling elements, the unit load, packaging, bulk handling, economic improvement procedures, justification of equipment, and special techniques.

**IM 222 Statistical Quality Control**  
**4 Credits**  
**3 Class Hours, 3 Lab Hours**  
The practical application of statistics and probability theory as it applies to acceptance sampling, control charts, and sampling plans.

**IM 223 Engineering Cost Analysis**  
**3 Credits**  
**3 Class Hours**  
A study of engineering economy including fundamental economic principles and concepts such as the Law of Supply and Demand, Law of Diminishing Return, Consumer-Producer Goods Relationships, Cost-Volume Relationships, and the Concept of Alternatives. The students will calculate interest, annuity, depreciation, and rate of return on investments. They will compare alternative investments and decisions and evaluate the risk of uncertainty in forecast.

**IM 224 Methods — Time Measurement**  
**4 Credits**  
**3 Class Hours, 3 Lab Hours**  
A course designed to give the student detailed training in the application of work measurement by the MTM technique. Includes the recognition and definition of fundamental work elements with practical applications.

**IM 225 Introduction to Labor Relations**  
**4 Credits**  
**4 Class Hours**  
This course gives an overview of all aspects of labor. Covers the dimensions of our labor force, the laws and regulations governing its employment, programs for its improvement and protection, and labor-management relations.

**IM 231 Supervisory Development**  
**4 Credits**  
**4 Class Hours**  
Applications of modern psychological principles to supervisory problems of training, motivation, and discipline. The supervisor's role as a morale builder and the importance of understanding, empathy, and proper counseling will be discussed.

**IM 232 Production Planning and Control**  
**4 Credits**  
**3 Class Hours, 3 Lab Hours**  
A discussion of the most economical methods, machines, operations, and materials for the manufacturing of a product. Also covered is the planning, scheduling, routing, and detailed procedure of production control.

**IM 233 Research Project**  
**1-4 Credits**  
**Class Hours as Required**  
A report written on a project which has been selected by the student and approved by the instructor. This course may be repeated until 4 hours of credit are earned. The consent of the department head or advisor is required before enrollment in this course.

**IM 234 Management of Human Resources**  
**4 Credits**  
**4 Class Hours**  
This course will comprehensively cover the elements of human resource management. This course will be reality-oriented because we know that practice is not always consistent with theory. Four of the key functions to be covered will be procurement, development, motivation and maintenance of human resources.
IM 235 Supervisory Development II
4 Credits
4 Class Hours
A second-quarter course covering the fundamental techniques supervisors or first-line managers need to know for supervision, managing and helping themselves succeed.

IM 236 Information Systems for Management
4 Credits
4 Class Hours
This course is an in-depth introduction to the practical world of computer use to improve students’ managerial effectiveness. Presents an overview of how the modern practice of management is affected by computers and information systems.

IM 237 Readings and Case Studies in Management
Class Hours as Required
This course exposes students to the writings of the most prominent contributors to the field of management. These selections are of high value in studying ideas currently important in management. The case studies are designed to illustrate certain managerial problems and to provoke thought and discussion about those problems. The course may be repeated until 4 hours of credit are earned. Consent of department head required.

IM 238 Labor Relations
4 Credits
4 Class Hours
A study of the various aspects of labor problems, including a study of wages, unemployment, organized labor, collective bargaining, union policies and methods, political activities of organized labor, the labor problem of employers and methods of communications between labor and management.

IM 239 Job Analysis and Evaluation
3 Credits
3 Class Hours
This course is devoted to the theory, principles, procedures and methods involved in analyzing and rating jobs to establish clear job differentials as well as to price jobs. The course will also emphasize the effect that employees and their performance have in determining wage differentials for the similar jobs and for total compensation. The theory and practice of establishing job standards and employee performance are fully discussed. The objective will be to discuss why certain techniques and methods are necessary.

MARKETING

MT 100 Introduction to Marketing
3 Credits
3 Class Hours
A general but critical survey course of the field of marketing, covering marketing channels, functions, methods, and institutions. Designed to introduce the marketing major, or students from other fields, to marketing.
Prerequisite: EC 101

MT 101 Salesmanship
4 Credits
3 Class Hours, 3 Lab Hours
A study of the principles and techniques of effective selling, with emphasis placed on the theoretical aspects of the psychology of selling and those personal characteristics found most often in a successful salesperson.

MT 211 Advanced Marketing
3 Credits
3 Class Hours
An in-depth study of marketing which utilizes the theories and principles to which students have been exposed in the lower division courses and which introduces the study of more complex marketing theories, practices, and concepts.
Prerequisites: MT 100, EC 101
MT 213 Marketing Research
3 Credits
3 Class Hours
The application of research techniques and procedures for measuring market opportunities. Specific attention, in addition to descriptive analysis, is given to techniques of the criteria for the identification and selection of market segments.
Prerequisite: upper division standing

MT 214 Marketing Opportunity Analysis
4 Credits
3 Class Hours, 3 Lab Hours
A hands-on application of research, strategic planning, and target marketing principles. Actual preparation and presentation of an M.O.A., written and oral, will give the student insight on application of these principles in actual situations.
Prerequisite: MT 213

MT 215 Advertising Theory I
3 Credits
3 Class Hours
A study of the development of advertising, the various media, and the social, psychological, and technical aspects of advertising.

MT 216 Applied Advertising II
3 Credits
3 Class Hours
Study and practice of the technical aspects of developing advertising campaigns for business, media surveying, and graphic applications of layout and copywriting.
Prerequisite: MT 215

MT 221 Industrial Purchasing
3 Credits
3 Class Hours
Procurement methods of industrial and wholesale operating supplies, component parts, raw materials and product buying for inventory maintenance. Also, scheduling delivery coordination and contracts and agreements with suppliers.

MT 222 Buyer Behavior
3 Credits
3 Class Hours
A study of industrial and ultimate consumer purchasing behavior and the theories underlying buying-decision processes. There is also an emphasis on marketing management and pivotal concepts in behavior sciences.
Prerequisites: MT 100, MT 211

MT 224 Public Relations
3 Credits
3 Class Hours
An examination of the communications process in terms of its theory and its relationship to the marketing areas of advertising, public relations, and personal selling.

MT 231 Retail Merchandising
3 Credits
3 Class Hours
An examination of the successful techniques of retail establishment marketing operations, including both small and large establishments. An overview of those elements of retail marketing, including location considerations, promotion, advertising, and training of personnel.
Prerequisite: upper division standing

MT 232 Retail Buying
3 Credits
3 Class Hours
A study of the activities included in the buying function of retail institutions. Merchandising math and related data processing techniques used by the buying specialist.
Prerequisite: MT 213
MT 233 Small Business Management I
3 Credits
3 Class Hours
Training in the operation of a small business concern, including principles of accepted accounting procedures, order billing, credits and collections, costs, payroll procedures, taxes, ratio analysis and franchising vs. independent ownership.
Prerequisite: upper division standing

MT 234 Sales Management
3 Credits
3 Class Hours
A study of the organization of sales staffs and departments, the techniques of campaign planning, quota assignment, compensation plans and other considerations primarily related to the personnel aspects of sales management.
Prerequisite: MT 101

MT 235 Small Business Management II
3 Credits
3 Class Hours
A study of small business strategy planning, decision making processes, organization factors, staff training and development. Also emphasizes financial and administrative control systems and legal and governmental regulations and tax structure.
Prerequisite: MT 233
CHEMICAL ENGINEERING TECHNOLOGY

Chemical engineering technicians are technical assistants to the chemical engineer and, as such, must be able to speak the language of the engineer.

Specifically, they must be familiar not only with the basic concepts of mathematics, chemistry, and physics but also with the variety of techniques and equipment used in the chemical processing industries.

An ever-expanding field, chemical engineering technology is employed extensively in industries which process plastics and synthetics, food and beverages, petroleum chemicals and products, paper, and industrial chemical intermediates. In addition, chemical engineering technology plays an important role in environmental control and in many other areas. As a result of continuing expansion in the field, engineering technicians with the necessary skills for advancement are offered interesting and rewarding careers across a broad spectrum of industrial complexes and governmental agencies.

TYPICAL POSITIONS OPEN TO CHEMICAL ENGINEERING TECHNICIANS

Development technician — assists engineers and chemists in developing new processes, improving existing processes, and carrying bench projects into pilot and/or full scale operation.

Environmental control technician — works with the chemical engineer or environmental engineer to oversee municipal or industrial air and water purification.

Pilot plant operator — operates equipment in research and development of new processes and products.

Chemical production technician — works in commercial plant with engineers and plant supervisors to help solve problems or improve operations.

Process instrumentation technician — works with the chemical engineer to assist in the design, testing, and installation of process control instrumentation.

Chemical salesperson — sells chemicals and assists customers in the development of uses for chemicals.

Chemical instrument salesperson — sells and services instruments and assists in the development of new process control instrumentation.

Analytical technician — performs laboratory analyses requiring use of specialized equipment or knowledge.
### CHEMICAL ENGINEERING TECHNOLOGY Curriculum

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<tr>
<th>Course</th>
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*The major electives will consist of two of the courses listed below.*

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**Technical electives will be taken from a list of approved courses.**
CONSTRUCTION ENGINEERING TECHNOLOGY

Construction engineering technology encompasses the broad fields of architecture, construction, and civil engineering. The curriculum presents theory, practical application, and related study instruction that will prepare graduates for direct entry into employment in the construction industry.

The construction industry has vastly expanded in technical innovations, thereby requiring technical knowledge and skills to manage and solve problems involved with construction projects. The construction engineering technology curriculum, therefore, offers an associate of engineering degree in four areas of emphasis:

CONSTRUCTION ADMINISTRATION SPECIALIZATION — combines course information from engineering and business technologies to provide technicians with skills to administer construction projects. Typical positions might include the following:

Architectural or engineering field representative — visits construction projects and reports on job progress and compliance with construction documents.

Superintendent’s aide — assists superintendent or project manager in monitoring construction costs.

Sales representative — sells and advises customers regarding the use of various construction materials.

Estimator aide — assists estimator in preparing quantity and pricing surveys.

Plan reviewer or building inspector — works for an agency reviewing compliance with prevailing construction guidelines.

STRUCTURAL SPECIALIZATION — presents course information from construction and civil engineering technologies to train technicians to become engineering aides on engineering design projects. Positions requiring this expertise would include:

Engineering junior designer and draftsperson — assists in the design and production of engineering working drawings.

Materials tester — assists engineers in testing soils, concrete, and various construction materials.

Engineering field representative — visits construction projects and reports on job progress and compliance with construction documents.

Structural detailer — assists in the production of engineering detail drawings.

Estimator’s aide — assists estimator in preparing quantity and pricing surveys.

TECTONICS SPECIALIZATION — presents course information from architecture and construction sources to train technicians in the mid-management skills of architectural design and drafting and building construction techniques. Positions requiring this expertise would include:

Architectural junior designer and draftsperson — assists in the design and production of architectural working drawings.

Sales representative — sells and advises customers regarding the use of various construction materials.

Junior specification writer — assists in the research and compilation of technical information for project specification manuals.

Model builder — assists designers in building three dimensional representations of projects.
Architectural field representative — visits construction projects and reports on job progress and compliance with construction documents.

Plan reviewer or building inspector — works for an agency reviewing compliance with prevailing construction guidelines.

Detailer — assists in the production of construction shop drawings.

HIGHWAY TRANSPORTATION SPECIALIZATION — combines course information from construction and civil engineering technologies so that technicians can develop skills to become engineering aides on highway or similar transportation design projects. Typical positions might include the following:

Materials tester — assists engineers in testing soils, concrete, and various construction materials.

Engineering field representative — visits construction projects and reports on job progress and compliance with construction documents.

Survey party member — assists survey chief in performing surveying work.

Estimator's aide — assists estimator in preparing quantity and pricing surveys.

Bridge inspector and field layout person — assists party chief in inspection of existing bridge work and performs field drafting.
# CONSTRUCTION ADMINISTRATION SPECIALIZATION

## Curriculum

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Technical electives may be selected from the following courses after consultation with and approval by the department chairperson:

- CT 221, ET 271, ME 273, BU 124, BU 201, BU 207, BU 231, IM 212, IM 238, MT 100, RE 101, RE 244
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Technical electives may be selected from the following after consultation with and approval by the department chairperson.

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**TECTONICS SPECIALIZATION Curriculum**

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Technical electives may be selected from the following after consultation with and approval by the department chairperson.

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# Highway Transportation Specialization Curriculum

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Technical Electives may be selected from the following after consultation with and approval by the department chairperson.

CT 163, CT 164, WT 101, WT 102, CT 234, CT 251, CT 253
# Construction Engineering Technology
## Course Requirements

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**Total:** 24

## Construction Administration Specialization

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69
**ECONOMICS**  
EC 101  Economics

**MECHANICAL ENGINEERING TECHNOLOGY**  
ME 233  Heating, Ventilation & Air Conditioning

**MID-MANAGEMENT**  
IM 225  Introduction to Labor Technical Electives  
(see curriculum requirements)

**TOTAL**

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**TECTONICS SPECIALIZATION**  
Course Requirements

**CONSTRUCTION ENGINEERING TECHNOLOGY**

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**STRUCTURAL SPECIALIZATION**

**Course Requirements**

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**TECHNICAL DRAWING**

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(see curriculum requirements)

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### HIGHWAY TRANSPORTATION SPECIALIZATION

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ELECTRICAL ENGINEERING TECHNOLOGY

The program in electrical engineering technology offers instruction in mathematics, science, electrical and electronic fundamentals and general education studies. This program is designed to prepare individuals to work at the technician level in the development, manufacture, instrumentation, testing, research, installation, and maintenance fields. The technician requires some of the knowledge and skills of both the professional engineer and the skilled craftsman. Developmental courses are available to assist students whose skills need to be raised to a college performance level.

The electrical engineering technology department offers associate of science degree programs in two specializations: energy and electronics. In the energy specialization the student is taught the characteristics of power production, transmission, and distribution, as well as the operation and control of electrical rotating machinery and transformers. In the electronic specialization the student is taught how digital and linear electronic devices are used in various fields such as digital computers, communications, control and switching applications. Also, emphasis will be placed on industrial electronics and applications.

The graduate technician can apply skills to processes and may perform simple design tasks under the supervision of an engineer.

A grasp of the theory of electricity and circuitry is basic. The technician will understand the use of transistors and other solid state devices. The electrical engineering technician may be employed by any industry using these devices, but would likely find a ready job market in the following areas:

1. Power generation and transmission
2. Power distribution and utilities
3. Industrial control and electrical maintenance
4. Electrical maintenance of major commercial or residential complexes
5. Manufacture or installation of electrical equipment
6. Telephone industries
7. Numerical control systems
8. Research and development
9. National defense
10. Digital computer electronics
11. Nuclear instrumentation and systems
12. Communications
13. Medical instrumentation technology
14. Consulting and engineering services
### ELECTRICAL ENGINEERING TECHNOLOGY

#### Curriculum

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### ELECTRONIC SPECIALIZATION Curriculum

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<td>ET 232 Pulse and Digital Circuits</td>
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#### FIFTH QUARTER

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**TOTAL**                                    77  66  99

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### ELECTRICAL ENGINEERING TECHNOLOGY Course Requirements

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#### DRAFTING

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### ELECTRICAL ENGINEERING TECHNOLOGY

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*All technical elective courses must be approved by the student's advisor.*
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<td>ME 271 Solar Energy or ME 272 Wind and Water Power</td>
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MECHANICAL ENGINEERING TECHNOLOGY

Mechanical engineering technology covers many areas or specialization involving the generation, transmission, and utilization of mechanical energy. The curriculum reflects this broad spectrum of subjects ranging from English composition, physics, and technical drawing to the laboratory oriented studies of materials science, electronics, thermal science, and instrumentation. The mechanical engineering technician, consequently, is a broadly educated person who assists the engineer in every phase of research, design, and production.

Three specializations — machine design, materials, and energy — are available in the mechanical engineering technology program and are offered based on adequate student interest and participation.

TYPICAL POSITIONS OPEN TO MECHANICAL ENGINEERING TECHNICIANS

Technical salesperson — sells and troubleshoots mechanical equipment; has the expertise to advise customers since he/she understands the equipment and can match it with the engineering requirements.

Engineering aide — performs tests; collects data; evaluates and makes recommendations for equipment modification, changes or replacements to eliminate technical problems.

Production assistant — assists production engineers, design engineers, and maintenance personnel with diagnosing and eliminating problems in process equipment and systems.
### MECHANICAL ENGINEERING TECHNOLOGY

#### Curriculum

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*See approved electives list.
MECHANICAL ENGINEERING TECHNOLOGY
Course Requirements

CHEMICAL ENGINEERING TECHNOLOGY  Credit Hours
CH 141  General Chemistry  4

DATA PROCESSING
DP 102  Computer Programming for  Engineering Technologies  2

DRAFTING
DR 101  Technical Drawing I  2
DR 102  Technical Drawing II  2

ELECTRICAL ENGINEERING TECHNOLOGY
ET 104  AC and DC Circuits  5
ET 241  Introduction to Rotating Machines  4

ENGLISH
EN 1050  Patterns of Composition  3
EN 1051  Writing Lab  1
EN 106  Technical Report Preparation  4
EN 121  Oral Communication  2

MATHEMATICS
MA 101  Algebra and Trigonometry I  4
MA 102  Algebra and Trigonometry II  4
MA 103  Applied Calculus  4

MECHANICAL ENGINEERING TECHNOLOGY
ME 101  Materials & Manufacturing Processes  4
ME 111  Industrial Safety  4
ME 124  Shop Practices I  2
ME 125  Shop Practices II  2
ME 131  Statics  4
ME 132  Dynamics  4
ME 221  Fluid Dynamics  4
ME 231  Thermodynamics & Heat Transfer  4
ME 241  Instrumentation  4

PHYSICS
PH 101  Physics of Mechanics  4
PH 102  Physics of Electricity and Magnetism  4
or
PH 103  Physics of Heat, Light, and Sound  4

SOCIAL SCIENCE
SC  3

*TECHNICAL ELECTIVES  16

TOTAL  103

*See approved elective list.

MECHANICAL ENGINEERING TECHNOLOGY
Approved Electives

ENERGY SPECIALIZATION  Credit Hours
ME 232  Applied Thermodynamics  4
ME 233  Heating, Ventilation & Air Conditioning  4
ME 234  Refrigeration Systems  4
ME 261  Special Projects  3
ME 271  Introduction to Solar Energy & Conservation  4
ME 272  Wind & Water Power Systems  4
ME 273  Passive Solar Design  4
ME 275  Alternate Fuels & Systems  4
ME 276  Special Topics  4
ET 244  Energy Systems I  4
ET 245  Energy Systems II  4
DR 103  Detail Drawing Layout  3
DR 121  Architectural Drawing Techniques I  2
MACHINE DESIGN SPECIALIZATION
ME 127 Advanced Shop Practices
ME 201 Strength of Materials
ME 211 Machine Elements I
ME 212 Machine Elements II
ME 233 Heating, Ventilation & Air Conditioning
ME 251 Metallurgy
ME 261 Special Projects
CH 231 Automatic Control of Processes
CT 121 Surveying I
CT 221 Surveying II
DR 103 Detail Drawing Layout

MATERIALS SPECIALIZATION
ME 127 Advanced Shop Practices
ME 201 Strength of Materials
ME 251 Metallurgy
ME 261 Special Projects
CT 232 Structural & Steel Design
CT 233 Reinforced Concrete Design
CT 234 Structural Wood Design
CT 235 Indeterminant Structures
DR 103 Detail Drawing Layout
DR 121 Architectural Drawing Techniques I
DR 221 Construction & Civil Drawing Techniques

Electives will be offered if there is sufficient student demand.

CERTIFICATE PROGRAMS
In addition to the courses leading to the associate degree in each technology, State Tech presently offers two certificate programs for the Aluminum Company of America (ALCOA) and one certificate program within the Engineering Technology Division. These programs are designed to prepare the student, in a minimal time, to enter industry as either a draftsman or as an industrial electrician.

CONSTRUCTION TECHNOLOGY
Certificate Program
The Construction Technology certificate program is offered for the Aluminum Company of America (ALCOA) in Alcoa, Tennessee. It consists of 46 quarter hours of course work designed to meet the needs of industry. Course work includes industrial mathematics, construction blueprint reading, industrial surveying, industrial fasteners, industrial tools, construction rigging, industrial construction, industrial equipment operation, construction field practice, and other special elective courses.

ENGINEERING GRAPHICS
Certificate Program
Engineering Graphics Technology certificate program offers instruction in mathematics, technical drawing, science engineering principles, and architectural and construction practices. This program is designed to prepare individuals to function as drafting technicians, and its major emphasis focuses on understanding technical drawing as a graphic language. The technician must be versed in techniques of graphic communication, understand the technical language of the professional engineer or architect, and communicate with the skilled craftsman.

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### Engineering Graphics Curriculum

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<td>DP 102 Computer Programming for Engineering Technology</td>
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<td>DR 221 Construction and Civil Drawing Techniques</td>
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<tr>
<td>ME 233 Heating, Ventilation and Air Conditioning</td>
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### INDUSTRIAL ELECTRICITY Certificate Program

This certificate program is offered by the Aluminum Company of America (ALCOA) in Alcoa, Tennessee. It consists of 56 quarter hours of course work designed to meet the needs of the industry. Course work includes mathematics, basic electricity, industrial electricity, electrical maintenance, power distribution, motors, controllers, and other elective courses.
ENGINEERING TECHNOLOGIES DIVISION
Course Descriptions
CHEMICAL

CH 101 Industrial Seminar

1 Credit
1 Class Hour
A study of the organization of typical local industries and the role of the chemical engineering technician. Emphasis is placed on discussion with speakers from local industries.

CH 111 Inorganic Chemistry I

4 Credits
3 Class Hours, 3 Lab Hours
A course covering the structure of atoms, chemical bonds, the nature of electromagnetic radiation, periodic relationships, chemical nomenclature, chemical formulas, the concept of the mole, stoichiometry, the nature of solutions, expressing concentrations, the concept of acids and bases, states of matter, the concept of pressure, the ideal gas law, and an introduction to oxidation and reduction reactions. The laboratory work includes experiments which illustrate the classroom material and provide for the development of laboratory techniques and procedures.
Co-requisite: MA 101

CH 112 Inorganic Chemistry II

4 Credits
3 Class Hours, 3 Lab Hours
The second course in inorganic chemistry covering many topics related to physical chemistry. Specific topics are: reaction rate, order of a chemical reaction, reversible reactions, chemical equilibrium, ionic equilibria, ionization of weak electrolytes, of hydrogen ion concentration, buffered solutions, solubility product constant, thermochromy, enthalpy, entropy, free energy, oxidation-reduction reactions and electromotive series. Laboratory experiments illustrate the principles involved.
Prerequisite: CH 111
Co-requisite: MA 102

CH 121 Organic Chemistry

4 Credits
3 Class Hours, 3 Lab Hours
A course covering the physical and chemical properties of compounds of carbon. Memorization of reactions is subordinated and strong emphasis placed on understanding the conditions that affect the initiation and rate of organic reactions. Organic chemical nomenclature is studied with some reference to the use and production of organic chemicals in industry. Laboratory experiments illustrate principles studied and develop laboratory techniques and procedures.

CH 131 Chemical Engineering Calculations I

4 Credits
3 Class Hours, 3 Lab Hours
An introduction to the basic methods of engineering analysis and calculation. Topics include conversion of units, proper format for engineering calculations, the use of graphs to represent data and functions, and material balances. Material balance calculations are made on simple systems (with and without chemical reactions), including bypass and recycle operations. A calculations laboratory provides an opportunity for students to work problems under supervision.
Prerequisite: MA 101

CH 132 Chemical Engineering Calculations II

4 Credits
3 Class Hours, 3 Lab Hours
A course covering elementary thermodynamics, energy balances (with and without chemical reactions) and the use of simple process flow diagrams. A calculations laboratory provides an opportunity for students to work problems under supervision.
Prerequisite: CH 131 and MA 102
CH 141 General Chemistry  
4 Credits  
3 Class Hours, 3 Lab Hours  
A course primarily intended for non-chemistry majors covering the basic concepts needed to understand chemical reactions — atomic structure, electron energy levels, the periodic table, chemical bonds, chemical formulae, chemical equations, the concept of the mole, oxidation-reduction reactions, acid-base reactions, ionic series, states of matter, solutions, ionization in aqueous solution, chemical reaction rates, and chemical equilibria. The above basic concepts are used to study electrolyte cells, corrosion, and engineering materials. The laboratory work emphasizes the study of corrosion and engineering materials.  
Prerequisite: MA 102

CH 151 Introductory Chemistry  
4 Credits  
3 Class Hours, 3 Lab Hours  
A course covering basic physical and chemical concepts of matter. Topics covered include systems of measurement, density, pressure, states of matter, physical and chemical changes, elements, atoms, compounds, the periodic table, chemical nomenclature, chemical reaction equations, and calculations using chemical reaction equations. The laboratory work emphasizes laboratory techniques and experiments to demonstrate the topics covered. Prerequisite: Students need a working knowledge of algebra (or MA 100 as a co-requisite).

CH 153 Water Analysis  
4 Credits  
2 Class Hours, 6 Lab Hours  
This course covers analytical procedures used in water purification facilities for quality control and in municipal type waste water treatment facilities for control of operation and evaluation of effluent. The theory of analysis is covered only minimally, and emphasis is placed on following written analytical procedures and performing analyses accurately in the laboratory. Methods of obtaining samples are covered also.  
Prerequisite: CH 112

CH 201 Industrial Inspection Trips  
4 Credits  
0 Class Hours, 3 Lab Hours  
A study of the technology of local industries. Visits are made to industrial facilities which are representative of major local industries. Written reports of visits are stressed. Techniques for job interviews and preparation of resumes are presented.

CH 211 Analytical Chemistry  
4 Credits  
2 Class Hours, 6 Lab Hours  
A course concerning the fundamental principles of the chemical and physical methods used in the chemical analysis of materials. The laboratory work concentrates on familiarization with a wide variety of analytical techniques and equipment used in industry, including gravimetric and volumetric methods and instrumental methods such as visual, infrared, and atomic absorption spectrophotometry, and gas liquid chromatography. 
Prerequisite: CH 112

CH 221 Chemical Engineering Materials  
4 Credits  
3 Class Hours, 3 Lab Hours  
A course covering the mechanical, physical, and chemical properties of engineering materials. The mechanisms and control of corrosion of engineering materials in different environments are discussed. Emphasis is placed on the determination of suitable materials for use in various chemical processing applications.
CH 231 Automatic Control of Processes
4 Credits
3 Class Hours, 3 Lab Hours
A course covering the fundamentals and techniques of process control. Topics include the elements of control theory, measurements of basic industrial parameters (such as flow rate, temperature, liquid level, and pressure), and industrial instrumentation. Emphasis is placed on the selection, placement and setting of control equipment.
Prerequisite: CH 242
Co-requisite: CH 243 and 244

CH 241 Chemical Engineering Principles I
3 Credits
3 Class Hours
The first in a series of three courses covering fundamentals of chemical engineering principles. This first course covers fluid statics and dynamics. Topics include fluid statics, manometers, flow measurement, laminar and turbulent flow, viscosity, Reynolds number, Fanning friction factor, pressure drop in pipes, fittings and valves, pumps; NPSH and terminal velocity of falling particles.
Prerequisites: MA 103 and CH 132

CH 242 Chemical Engineering Principles II
3 Credits
3 Class Hours
The second in a series of three courses covering fundamental chemical engineering principles. This second course covers transmission of heat by conduction and convection. Heat exchangers of various configuration — including shell and tube exchangers, jacketed vessels, coils and fins are covered.
Prerequisite: CH 241

CH 243 Chemical Engineering Principles III
3 Credits
3 Class Hours
The third in a series of three courses covering fundamental chemical engineering principles. This third course covers selected operations involving mass transfer in combination with fluid flow and heat transfer. Topics include fractional distillation, humidification, gas absorption, liquid extraction, and drying. Problems of scale-up are discussed.
Prerequisite: CH 242

CH 244 Chemical Engineering Principles IV
3 Credits
3 Class Hours
This course integrates the theoretical and practical aspects of polymer processing in covering extrusion and molding of thermoplastics. Extrusion of profiles, film, sheet, fibers, and foam is covered along with the primary extrusion equipment and the auxiliary equipment used in each type of extrusion. Emphasis is placed on the special geometry of parts to be made in molds and on the geometry and construction of molds. Mold cooling and part shrinkage are also covered.
Prerequisite: CH 271, or consent of the instructor.

CH 251 Polymer Processing Principles I
4 Credits
3 Class Hours, 3 Lab Hours
An introduction to air and water pollution control. Pollutants of interest or concern to local industries are emphasized, and both the methods of analysis and the methods of control are studied for each pollutant. Subjects covered include sulfur dioxide, carbon monoxide, nitrogen oxides and odors in air and in biodegradable and non-biodegradable
organic compounds, phosphates, nitrates and other nutrients, heavy metals, and dissolved salts in water.

Prerequisite: CH 281

CH 271 Polymer Chemistry
4 Credits
3 Class Hours, 3 Lab Hours
A survey of the chemical and physical properties of long-chain molecules. Topics include polymerization, polymer characterization; glass and melting transitions, and polymer structure and related properties. Nylon and methyl methacrylate polymerization are covered specifically.

Prerequisite: CH 121

CH 281 Environmental Chemistry
4 Credits
3 Class Hours, 3 Lab Hours
A study of the chemistry of air and water pollution. Topics include chemical reactions, sources and sinks, sampling techniques, and analytical methods for important air and water pollutants.

Prerequisite: CH 121 or consent of the instructor.

CH 291 Industrial Safety
3 Credits
3 Class Hours
A course surveying the development of safety standards and their application to the chemical processing industries. The requirements of the Occupational Safety and Health Act are presented. Emphasis is placed on the best modern industrial standards and methods for a good safety program.

Prerequisite: CH 121

CONSTRUCTION

CT 101 Building Methods of Light Construction
3 Credits
3 Class Hours
This course covers basic techniques and fundamentals essential in erecting a light frame building. It also covers various phases of light construction in a logical sequence beginning with the building site, through each building system, to the finished work.

Prerequisite: CT 101

CT 111 Construction Materials I
4 Credits
3 Class Hours, 3 Lab Hours
Emphasis is placed on using the characteristics and methods of handling construction materials to determine the advantages and disadvantages of the material in relation to the construction application. Topics covered include concrete, masonry, metals, wood, thermal protection, door and windows, and finishes. Test procedures familiarize students with physical characteristics.

Prerequisite: CT 102

CT 112 Construction Materials II
4 Credits
3 Class Hours, 3 Lab Hours
A study of materials used in highway construction and related fields including aggregates, cements, concrete, asphalts and steel. Emphasis is placed on concrete mix design and asphalt mix design. Laboratory work includes performance of standard tests and the preparation of technical reports of the tests.

Prerequisite: CT 102
CT 121 Surveying I
4 Credits
2 Class Hours, 6 Lab Hours
An introductory course in surveying designed to familiarize the student with the use of the steel tape, the transit, and the level, with emphasis on applications of these instruments in engineering and construction projects such as boundary surveys, traverse computations, profile leveling, and field notes.
Prerequisite: MA 101

CT 131 Statics (same as ME 131)
4 Credits
3 Class Hours, 3 Lab Hours
A study of bodies at rest or in a state of equilibrium with their surroundings. This course will give the student an appreciation and understanding of how forces act externally on structures.
Prerequisite: MA 101
Co-requisite: MA 102 and PH 101

CT 211 Soils and Foundations
4 Credits
3 Class Hours, 3 Lab Hours
Topics discussed include soil properties, classification, compaction, shear strength, consolidation, lateral earth pressure, bearing capacity and settlement. The student conducts and files reports on laboratory tests.
Prerequisite: CT 111
Co-requisite: CT 231

CT 212 Hydrology
4 Credits
3 Class Hours, 3 Lab Hours
Topics discussed include hydrostatics of fluids, energy losses in fluids in motion, pipe flow, open channel flow, surface run-off, and an introduction to the design of distribution systems.
Prerequisite: ME 221

CT 221 Surveying II
4 Credits
3 Class Hours, 3 Lab Hours
Using the survey and layout course as a foundation, this advanced course develops with greater detail the student’s understanding of surveying procedures. Course material includes control systems and datums, mapping, and subdividing, volume calculations, horizontal and vertical curves, precision and boundary surveying.
Prerequisite: CT 121

CT 231 Strength of Materials
4 Credits
3 Class Hours, 3 Lab Hours
A study of the principles of stress and strain; shear, bearing and bending stresses; development of shear and bending moment diagrams; stresses and deflection of beams; columns and combined stresses; connections and the application of this theory to determine capacity of structural elements.
Prerequisites: CT 111, CT 131
Co-requisite: MA 103

CT 232 Structural and Steel Design
4 Credits
3 Class Hours, 3 Lab Hours
The design of structural steel members and their connections, tensions, compression members, beams, girders, trusses, and columns subjected to concentric and eccentric loads. The lab involves prototyping of various structural systems, performing calculations, and preparing drawings related to steel design.
Prerequisites: CT 231 and MA 103

CT 233 Reinforced Concrete Design
4 Credits
3 Class Hours, 3 Lab Hours
Design of reinforced concrete structures, fundamentals of design of beams, columns, floor systems, footing and retaining walls. The lab involves prototyping of various structural systems, performing calculations, and preparing drawings related to reinforced concrete design.
Prerequisite: CT 231
CT 234 Structural Wood Design  
4 Credits  
3 Class Hours, 3 Lab Hours  
Design of structural wood members and their connections; post-and-beam construction, roof trusses, bridges, arches, formwork for reinforced concrete. Lab involves prototyping of various structural systems, performing calculations, and preparing drawings related to wood design.  
Prerequisite: CT 231

CT 235 Indeterminate Structures  
4 Credits  
3 Class Hours, 3 Lab Hours  
A course which follows CT 231 and covers the deflections and analysis of indeterminate beams, trusses, bents, and frames.  
Prerequisite: CT 231

CT 242 Building Plumbing and Electrical Systems  
4 Credits  
3 Class Hours, 3 Lab Hours  
A study of basic hydraulics, water sources and distribution, plumbing systems, sewage systems, sewage treatment, and storm drainage. Introduction to electrical distribution, lighting, and acoustics.  
Prerequisite: ME 233

CT 251 Construction Documents  
3 Credits  
3 Class Hours  
This course covers construction drawings, specifications, bonds, contracts, and other documents related to the construction industry. Topics also include labor requirements, contractor relations and responsibilities, contract performance requirements, and bidding procedures.  
Prerequisite: CT 102

CT 252 Estimating  
3 Credits  
3 Class Hours  
This course is designed to present the student with basic principles and current practices employed in estimating construction costs. Quality surveys from working drawing and specifications are reviewed. Study includes both direct and indirect costs, with emphasis on calculating labor, material, plant, equipment, and overhead costs and profit.  
Prerequisite: CT 111 or CT 112

CT 253 Project Control and Construction Management  
3 Credits  
3 Class Hours  
This course is designed to provide the student with the tools and procedures needed to control a construction project. Areas to be explored will include physical layout of the site, the sequence of operations, and their scheduling. Such scheduling will include labor requirements, subcontractors and material deliveries. Planning methods to be studied will include bar charts and the critical path. Reports, job logs, and cost control systems will receive attention.  
Prerequisite: CT 251

CT 254 Construction Rehabilitation  
3 Credits  
3 Class Hours  
This course covers the practices and procedures involved in restoring or renovating an existing structure. Emphasis on analysis of existing structural components and existing material usage to determine if the structure is capable of being rehabilitated, then on the techniques and fundamentals necessary to rehabilitate it.  
Prerequisite: CT 111 or CT 112

CT 255 Construction Safety  
3 Credits  
3 Class Hours  
The intent of this course is to introduce the student to the concept of construction safety and to draw together some approaches to the problem of compli-
ing with the Occupational Safety and Health Act of 1970.
Prerequisite: CT 102

CT 257 Blueprint Reading and Quantity Surveys
4 Credits
2 Class Hours, 3 Lab Hours
Study and interpretation of building plans: architectural, structural, mechanical, and electrical. The student is taught the procedures for preparing quantity surveys dealing with individual sections of work.
Prerequisite: CT 111 or CT 112

CT 261 Highway Design and Construction
4 Credits
3 Class Hours, 3 Lab Hours
History of highway construction and highway planning. Elements of location, alignment, design standards, traffic flow and traffic controls are discussed and incorporated into highway design problems. Foundation preparation, types of pavements and pavement design are stressed along with design of intersections and the role of highways in an integrated transportation system.
Prerequisite: CT 211

CT 271 Introduction to Architecture
2 Credit Hours
2 Class Hours
Through the medium of formal lectures and small discussion group meetings, this course is designed to show beginning students how construction technique has developed throughout history and how buildings have been affected by the social, political, economic, and artistic circumstances within which they have been built.
Prerequisite: CT 102

CT 272 Architectural Design
3 Credit Hours
9 Lab Hours
Individual design projects are developed by the student from conception to presentation under faculty supervision. The course concentrates on projects other than residential construction, relating considerations of site, topography, sun orientation, energy, vehicular access, internal circulation, spatial organization, and construction methods. Appropriate graphic presentation techniques (drawings and simple models) are explored.
Prerequisite: CT 271

CT 273 Special Projects
3 Credit Hours
9 Lab Hours
Group design projects are developed by teams of students under faculty supervision. The course concentrates on projects related to practical applications of design allowing students to use theory, methods, and practices similar to those encountered on the job.
Prerequisite: CT 272

CT 274 Architectural History I
3 Credit Hours
3 Class Hours
Traces the development of architecture and construction through historical periods. This course covers ancient architecture and the development of western architecture through the Renaissance.
Prerequisite: CT 271

CT 275 Architectural History II
3 Credit Hours
3 Class Hours
Traces the development of architecture and construction through historical periods. A continuation of Architectural History I, which begins with the Beaux Arts, through the development of contemporary architecture.
Prerequisite: CT 274
DRAFTING

DR 100 Introductory Technical Drawing
2 Credits
6 Lab Hours
A course designed to introduce proper use of the drafting equipment, lettering, sketching and line quality, surface identification and orthographic projection.

DR 101 Technical Drawing I
2 Credits
6 Lab Hours
An introduction to lettering, sketching, instrumental drawing, orthographic projection, pictorial representation, dimensioning sections and auxiliary drawing with the course slanted toward the technology of primary interest to the student.

DR 102 Technical Drawing II
2 Credits
6 Lab Hours
Preparation of detail orthographic projections, sections and conventions, auxiliary drawing, isometric and oblique drawing. Common fasteners and simple assembly drawings are also covered in this course.

Prerequisite: DR 101

DR 103 Detail Drawing Layout
3 Credits
1 Class Hour, 6 Lab Hours
An introduction to structural drawing and detailing, architectural drawing and detailing, axonometric projection, and perspective drawing. Major emphasis is on individual student projects employing design, detail, and assembly drawing.

Prerequisite: DR 102

DR 121 Architectural Drawing Techniques I
2 Credits
0 Class Hour, 6 Lab Hours
Architectural Drawing I covers basic techniques and fundamentals essential in preparing a student to produce architectural drawings. Use of drafting equipment, lettering techniques, freehand sketching, as well as presentation techniques, is covered in this course.

DR 122 Architectural Drawing Techniques II
2 Credits
0 Class Hours, 6 Lab Hours
A study of drafting techniques related to industrial and commercial building types. The development of sketches, presentation drawings, working drawings, and outline specifications receive the major emphasis in this course.

Prerequisite: DR 121

DR 140 Technical Drawing for Technicians
2 Credits
6 Lab Hours
A technical drawing course for students who do not anticipate being draftsmen or designers. Fundamentals of orthographic projection are presented. Emphasis is on making sketches with dimensions and on blueprint readings. Students will be given a project suitable for their major field.

DR 221 Construction and Civil Drawing Techniques
2 Credits
6 Lab Hours
This course covers the fundamentals and techniques used in architectural detailing of concrete, steel, and masonry structural members meeting specified requirements, as well as topographical, site, and map drawing.

Prerequisite: DR 122
ELECTRICAL ENGINEERING TECHNOLOGY

ET 101 Electric Circuits I
4 Credits
3 Class Hours, 3 Lab Hours
An introductory course in DC Electric Circuits. Topics include units and notations, atomic structure, current and voltage, resistance, Ohm's Law, power, energy, series circuits, parallel circuits, series-parallel networks, analysis methods and network theorems. The various types of electronic measuring instrumentation are introduced throughout the course as required.
Co-requisite: MA 101

ET 102 Electric Circuits II
4 Credits
3 Class Hours, 3 Lab Hours
An intermediate course in electric circuits in which subject matter pertaining to the transition from the study of DC to AC circuits is treated as well as all basic AC circuit behavior. Topics treated are capacitors, magnetic circuits, inductors, sinusoidal alternating current, phasors, series and parallel AC networks. The various types of electronic measuring instrumentation are introduced throughout the course as required.
Co-requisite: MA 102
Prerequisite: ET 101

ET 103 Electric Circuits III
4 Credits
3 Class Hours, 3 Lab Hours
A course in advanced AC Electric Circuits. Topics treated are analysis methods, network theorems (AC) and power (AC), series and parallel resonance, polyphase systems, and transformers. The various types of electronic measuring instrumentation are introduced throughout the course as required.
Prerequisite: ET 102

ET 104 DC and AC Circuits
5 Credits
4 Class Hours, 3 Lab Hours
A course for non-electronics majors. The course includes basic electrical fundamentals, the atom electron movement, insulators, conductors, voltage and current. Basic DC Circuits is covered, including Kirchoff's Law, power, capacitors and inductors in DC circuits. The second portion of the course deals with AC circuits expanding the methods learned in DC with phasor analysis.
Co-requisite: MA 102

ET 105 Seminar
1 Credit
1 Class Hour
This seminar offers the chance for students to hear speakers from industry and learn the role of an engineering technician in local companies.

ET 121 Active Devices I
4 Credits
3 Class Hours, 3 Lab Hours
An introductory course in solid-state bipolar devices and the basic circuits in which they are used. Included are semiconductor physics, the junction diode, large and small signal diode approximations, common base, common collector approximations, and large signal operation.
Co-requisite: ET 102

ET 122 Active Devices II
4 Credits
3 Class Hours, 3 Lab Hours
An expanded study of solid state circuits and their design including biasing methods, AC operation, cascading of stages, temperature effects, and frequency response.
Prerequisite: ET 121

ET 211 Electrical Safety
3 Credits
3 Class Hours
This course covers the area of job-related safety. OSHA compliance, electrical safety philosophies, and engineering factors involved in meeting safety standards are a few of the topics discussed.
ET 223 Active Devices III
4 Credits
3 Class Hours, 3 Lab Hours
A study of solid state, special purpose devices and the circuits in which they are used. Included are H parameter, field-effect transistors, silicon controlled rectifiers, triacs, diacs, unijunction transistors, varistors, thermistors, varactors, light emitting diodes, optoelectronic devices and integrated circuits.
Prerequisite: ET 122

ET 231 Introduction to Digital Logic
4 Credits
3 Class Hours, 3 Lab Hours
A study of basic numbering systems, basic computer codes and Boolean Algebra. The simplification of logic circuits using Karnaugh maps is included. Following combinational logic, a brief study of sequential devices is covered. Implementation techniques using NAND and NOR Logic are also included.
Prerequisite: ET 231 and ET 232

ET 234 Microprocessors
4 Credits
3 Class Hours, 3 Lab Hours
A comprehensive overview of microprocessor systems, design, programming, and applications. Included in the course is coverage of the popular types of microprocessors such as the Motorola 6800 and the Intel 8080.
Prerequisite: ET 233

ET 225 Industrial Electronics and Logic
4 Credits
3 Class Hours, 3 Lab Hours
A study of electronic devices, circuits, and systems used to control machinery and processes in industry. All of the important solid state devices used in industry are presented in design situations with appropriate applications. Included are field effect transistors, silicon controlled rectifiers, triacs, diacs, PNPN silicon switches, unijunction transistors, industrial control relays, time delay circuits, digital control concepts, digital sequence control, linear and digital integrated circuit and electronic control of motors and power supplies.
Prerequisite: ET 122

ET 232 Pulse and Digital Circuits
4 Credits
3 Class Hours, 3 Lab Hours
A study of wave-shaping, clipping and clamping circuits, inverter circuits, bistable, monostable, and astable multivibrators. Some triggering circuits and the Schmitt Trigger are also included. Laboratory experiments emphasize the investigation and design of all circuits covered.
Prerequisite: ET 122
Co-requisites: ET 231 and ET 223

ET 221 Digital Computer Circuits
4 Credits
3 Class Hours, 3 Lab Hours
A study of computer systems including different types of shift registers and counters. A study of timing and sequencing operations is included along with a complete study of the ALU. Also included are different types of memory and some programming concepts, and an introduction to microprocessors.

ET 233 Digital Computer Circuits
4 Credits
3 Class Hours, 3 Lab Hours
A study of computer systems including different types of shift registers and counters. A study of timing and sequencing operations is included along with a complete study of the ALU. Also included are different types of memory and some programming concepts, and an introduction to microprocessors.

ET 241 Introduction to Rotating Machines
4 Credits
3 Class Hours, 3 Lab Hours
A course designed to give the student an understanding of transformers and other magnetic devices along with a basic knowledge of the characteristics and performance of rotating machines. A comprehensive treatment of DC motors and generators, single and polyphase motors, alternators, and synchronous machines is given.
Prerequisite: ET 102 or ET 104
ET 243 Operational Amplifiers 4 Credits
3 Class Hours, 3 Lab Hours
This course presents the theoretical concepts and practical parameters that determine the qualities of IC Op Amps such as their high input impedance, low output impedance, high gain, and other attractive features. Included are differential and operational amplifier circuits.
Prerequisite: ET 223

ET 244 Energy Systems I 4 Credits
3 Class Hours, 3 Lab Hours
This course emphasizes study of power systems and their components, phasor and transmission diagrams, basic power circuit, percent and per unit quantities, current and voltage relations on a transmission line, four terminal networks, and ABCD constants.
Prerequisite: ET 246

ET 245 Energy Systems II 4 Credits
3 Class Hours, 3 Lab Hours
Further study of electrical power systems emphasizing more on power limits — stability, faults on power systems, circuit-interrupting devices, relays and relay systems, electrical installation, and effective grounding.
Prerequisite: ET 244

ET 246 Magnetism and Transformers 4 Credits
3 Class Hours, 3 Lab Hours
This course involves the study of magnetic fields, Ohm's Law for magnetic fields, magnetizing force, Hysteresis, Ampere's circuital law, determining N, air gaps, series-parallel magnetic circuits, ideal transformers, ratio relations, general transformer equations, practical conditions, transformer equivalent circuits, phasor and voltage relations, voltage regulations, short and open circuit tests, efficiency, and types of transformers.
Prerequisite: ET 103

ET 248 Rotating Machinery I 4 Credits
3 Class Hours, 3 Lab Hours
The main objective of this course is to study electromechanical energy conversion, magnetic fields, construction and characteristics of DC Generators and motors, Dynamos, Synchronous alternators, operation and control of electrical machinery.
Prerequisite: ET 103
Co-requisite: ET 246

ET 249 Rotating Machinery II 4 Credits
3 Class Hours, 3 Lab Hours
Further study of the characteristics of electrical machinery, polyphase induction motors, single phase induction motors, special uses of synchronous and induction motors, motor control and operations.
Prerequisite: ET 248

ET 251 Introduction to Communications 4 Credits
3 Class Hours, 3 Lab Hours
This course is an introductory study of the various circuits and devices common to the field of communications. Included are noise calculations, information and bandwidth, non-sinusoidal waveforms, Fourier analysis, AM transmission and reception, SSB communications and FM transmission and reception.
Prerequisite: ET 223

ET 252 Communication Systems 4 Credits
3 Class Hours, 3 Lab Hours
A course which involves an expanded treatment of the basic circuits covered in ET 251 and develops these concepts into communication systems. Included are TV transmission and reception, CB
transceivers, facsimile, mobile telephone, communications transceivers, digital communications, pulse modulation, radio telemetry, transmission lines, wave propagation, antennas, waveguides and microwaves.

Prerequisite: ET 251

ET 260 Special Project
3 Credits
1 Class Hour, 6 Lab Hours
A project course in which the student and instructor identify a certain project to be pursued by the student. In this course, the student is required to submit the project for acceptance, acquire the parts, and build and test the completed product.
Prerequisite: ET 223 and approval of head of department.

ET 271 Engineering Economics and Cost Estimating
3 Credits
3 Class Hours
An introductory study of the various economic principles and applications common to the field of engineering. Included are some cost estimating methods and analysis.

ME 111 Industrial Safety
3 Credits
2 Class Hours, 3 Lab Hours
This course is designed to familiarize students with basics of power distribution for industrial plants and commercial buildings. Emphasis is placed on voltage selection, one-line diagrams, motor control circuits, power factor improvements, protective devices, system grounding, system planning, medium voltage switchgears, cost estimation, and protective relaying.
Prerequisite: EN 1050, EN 1051

ME 124 Shop Practices I
2 Credits
1 Class Hour, 3 Lab Hours
This course serves as an introduction to the use of machine tools. Emphasis is placed on "hands-on" experience with the common machine tools: fabrication using welding and sheet metal processes; inspection, measurement, and gauging during the forming process.

ME 125 Shop Practices II
2 Credits
1 Class Hour, 3 Lab Hours
This course is a continuation of ME 124 with additional emphasis placed on the more intricate machine elements such as threads and gears.
Prerequisite: ME 124
ME 126 Shop Practices (EET majors only)

2 Credits
1 Class Hour, 3 Lab Hours
This course is an introduction into the use of machine tools. Content is the same as ME 124 with the exception that welding techniques have been replaced by computer techniques. Limited to Electronic Engineering Technology majors only.

ME 127 Advanced Shop Practices

3 Credits
1 Class Hour, 6 Lab Hours
This course builds on the experience of ME 124 and 125 covering more advanced shop fabrication techniques.
Prerequisite: ME 125

ME 131 Statics (Same as CT 131)

4 Credits
3 Class Hours, 3 Lab Hours
A course covering the branch of mechanics which deals with the effects of force acting upon a body at rest. Vectors, equilibrium, friction, and center of gravity are some of the concepts studied.
Prerequisite: MA 101
Co-requisite: MA 102 and PH 101

ME 132 Dynamics

4 Credits
3 Class Hours, 3 Lab Hours
As statics deal with the external forces on a body at rest, dynamics is concerned with the forces on a body which arise because it has motion. Velocity, accelerations, and their relationships to the dynamic forces are discussed in addition to the concepts of work, kinetic energy, momentum, and vibrations.
Prerequisite: ME 131
Co-requisite: MA 103

ME 201 Strength of Materials (Same as CT 231)

4 Credits
3 Class Hours, 3 Lab Hours
A study of the internal reactions to external forces. This course deals with how various materials behave when loads or forces act on them. Principles of stress and strain, shear and bending are covered such that a material's strength may be measured or calculated in various load carrying configurations such as beams, columns, compression, or tension structures.
Prerequisite: ME 131
Co-requisite: MA 103

ME 211 Machine Elements I

4 Credits
3 Class Hours, 3 Lab Hours
A course covering various elementary machine elements. Bearing design, selection, power shaft design, fastener design and weld design are a few of the topics covered.
Prerequisite: ME 201 and ME 132.

ME 212 Machine Elements II

4 Credits
3 Class Hours, 3 Lab Hours
A study of more advanced machine elements covering camshafts, gears, clutches, flywheels and their applications, analysis, and design.
Prerequisite: ME 211

ME 221 Fluid Mechanics

4 Credits
3 Class Hours, 3 Lab Hours
A study of fluid mechanics with emphasis on the use of hydraulics and pneumatics for power transmission; pumping theory and applications such as the pressure losses in pipes, energy requirements, pressure head, viscosity and flow rate.
Prerequisite: ME 131
Co-requisite: MA 103
ME 231 Thermodynamics and Heat Transfer
4 Credits
3 Class Hours, 3 Lab Hours
An introductory course in the fundamentals of applied thermodynamics and heat transfer. Conservation of energy (1st law of thermodynamics) is discussed and applied to practical engineering problems. The concepts of entropy, reversibility and the second law of thermodynamics; the steam table and mollier diagram; conduction, convection and radiation heat transfer; heat exchangers and their applications are some of the topics covered.
Prerequisite: ME 221 and ET 104

ME 232 Applied Thermodynamics
4 Credits
3 Class Hours, 3 Lab Hours
An introductory course in applied thermodynamics. Topics covered include energy transformations, heat units, gas laws, and basic heat engine cycles ranging from the Carnot cycle through the otto, diesel, and gas turbine cycles. Also included are the steam power cycles (fossil fired and nuclear).
Prerequisite: ME 231

ME 233 Heating, Ventilation and Air Conditioning
4 Credits
3 Class Hours, 3 Lab Hours
A course covering the calculation of heating and air conditioning loads. Human comfort, ventilation requirements, the psychrometric chart and its use, air distribution and duct sizing are topics covered. Available refrigeration and heating systems are discussed as time permits.
Prerequisite: Second year standing

ME 234 Refrigeration Systems
4 Credits
3 Class Hours, 3 Lab Hours
A course that introduces the various market refrigeration systems and their components. A review of heat transfer and thermodynamic cycles, followed by discussions dealing with heat pumps, various systems, piping considerations, valving requirements and equipment specifications.
Prerequisite: ME 231

ME 241 Instrumentation
4 Credits
3 Class Hours, 3 Lab Hours
A course designed to introduce the student to the various mechanical and electronic devices used to measure flow rate, pressure, level, temperature, and other physical quantities.
Prerequisite: Second year standing

ME 251 Metallurgy
4 Credits
3 Class Hours, 3 Lab Hours
A course covering the properties of metals. Crystal structure, phase diagrams, heat treatment are a few of the topics studied in relation to mechanical properties of metals.
Prerequisite: Second year standing

ME 261 Special Projects
3 Credits
1 Class Hour, 6 Lab Hours
A project course in which the student and instructor identify a research design problem to be pursued by the student.
Prerequisite: Second year standing

ME 271 Introduction to Solar Design
4 Credits
3 Class Hours, 3 Lab Hours
This course is an introduction to the various types of solar heating systems and their applications. Water and air mediums, active and passive systems, available market products, site considerations, insulation requirements, and
economic considerations are some of the topics discussed.
Prerequisite: Consent of MET department

ME 272 Wind and Water Power Systems
4 Credits
3 Class Hours, 3 Lab Hours
A course designed to introduce the equipment and capabilities of power production using wind and water power plants. Energy storage, electrical systems, water flow and air flow considerations, and system performance are a few of the topics discussed.
Prerequisite: Consent of MET department

ME 273 Passive Solar Design
4 Credits
3 Class Hours, 3 Lab Hours
A course built on the experience gained in ME 271 which deals exclusively with passive solar systems. Existing passive structures/designs are analyzed and new passive system ideas are utilized to build a passive device.
Prerequisite: Consent of MET department

ME 274 Active Solar Design
4 Credits
3 Class Hours, 3 Lab Hours
While ME 273 dealt with passive system design, ME 274 covers active systems exclusively. The laboratory time is used to visit active sites and for the construction, design or installation of an active system.
Prerequisite: Consent of MET department

ME 275 Alternative Fuels and Systems
4 Credits
3 Class Hours, 3 Lab Hours
This course is designed to introduce and analyze the "newer" fuels on the alternative energy market. Wood energy and its industrial and household applications; methane/bio-mass and its generation and uses; alcohol fuels and their uses are a few of the topics to be discussed. The laboratory will be used to build a methane generator or to modify an existing engine or heat application for an alternative fuel.
Prerequisite: Consent of MET department

ME 276 Special Topics
4 Credits
3 Class Hours, 3 Lab Hours
This course introduces other alternative energy sources such as geo-thermal, photovoltaics, alternative energy storage, fuel cells, thermal ocean gradients, waves, solar concentrators and others. Emphasis is placed on renewable energy sources. The laboratory is used to analyze the feasibility of several of these alternative energy systems.
Prerequisite: Consent of MET department
RELATED STUDIES DIVISION

The Related Studies Division provides the foundations for a solid technical background. Each course has been designed to provide basic information necessary to the technician. The department heads of each technology have assisted in determining both course content and sequence of curriculum. The related areas are English, social science, mathematics, and physics.

COMMUNICATIONS DEPARTMENT

English
The English program promotes mastery of the skills of reading, writing, listening, speaking, and reporting — all essential tools of the technician. The practical aspects of communication — grammar, spelling, and vocabulary — are emphasized as needed to aid the student in developing sound techniques of collecting and presenting data.

Social Sciences
The social science and psychology courses seek to prepare students to deal effectively with situations and problems encountered in a growing technical society. Emphasis is on practical knowledge and skills.

DEVELOPMENTAL STUDIES DEPARTMENT

The Developmental Studies Department promotes mastery of the basic skills necessary for the successful completion of the State Tech curriculum. The content of the classes — English, reading, and math — is directly related to the technical curriculum. Additionally, the student is strongly encouraged to take advantage of the specially selected resources available in the Learning Lab and in the Library/Media Center. Furthermore, in order to increase the student’s awareness of the expectations placed upon students, the Developmental Studies Department seeks to promote the student’s understanding of adequate preparation for classes and of appropriate participation in classes.

MATHEMATICS

Physics courses are designed to offer students working knowledge of the basic principles of mechanics, heat, sound, electricity, light, magnetism, and other areas upon which all technological processes depend. An understanding of basic physical laws is essential for the technicians to maintain a proper perspective toward their work, which extends to the successful handling of new and unfamiliar tasks.

COURSE REQUIREMENTS

Related Studies requirements are listed in the appropriate section for each technology.
RELATED STUDIES DIVISION
Course Descriptions

ENGLISH

EN 100 Basic Writing Skills
3 Credits
3 Class Hours
A course designed to improve the individual student's basic writing skills, particularly in the areas of sentence structure and logical development of ideas. Grammar is studied as necessary to promote clarity and logic.

EN 1050 Patterns of Composition
3 Credits
3 Class Hours
A course focusing on the basic patterns of writing of use to the technician, with emphasis upon accuracy, clarity, and conciseness. The use of resources, development of a technical vocabulary, and a review of grammar and spelling are employed as needed.

EN 1051 Laboratory
1 Credit
3 Lab Hours
The writing laboratory provides opportunity for students to improve spelling and grammar usage skills. In addition, it allows for in-class writing experience based on writing assignments given in the lecture. Diagnostic testing and consultation serve as bases for setting goals to meet various writing laboratory needs.

EN 106 Technical Report Preparation
3 Credits
3 Class Hours
A course in organizing and preparing various types of technical communiques and reports, including memoranda, business letters, proposals, abstracts, oral reports, semiformal and formal technical reports.
Prerequisites: EN 1050 and EN 1051

EN 1150 Business Communications
3 Credits
3 Class Hours
English 1150 is designed to improve students' written communication abilities. Students will learn to apply fundamental writing skills to business correspondence and to selected short business reports, such as trip reports, job descriptions, instructions, and press releases.

EN 1151 Laboratory
1 Credit
3 Lab Hours
The writing laboratory provides opportunity for students to improve spelling and grammar usage skills. In addition, it allows for in-class writing experience based on writing assignments given in the lecture. Diagnostic testing and consultation serve as bases for setting goals to meet various writing laboratory needs.

EN 116 Business Report Writing
3 Credits
3 Class Hours
A continuation of short reports, including abstracts, proposals, and investigations, plus research, organization, and drafting of a formal business report from the student’s field of study. Employment communications, including company research, personal resumé, covering letter, and interview techniques are also studied and practiced.

EN 121 Oral Communication
3 Credits
3 Class Hours
Listening exercises, group interaction, and short presentations serve to prepare the student for formal informative and persuasive speeches. Audience analysis, library research, and self-criticism of videotaped speeches on technical topics are emphasized.
MATHMATICS

MA 100 Elementary Algebra
5 Credits
5 Class Hours
Intended to provide a basic knowledge of algebra and to build skills in the use of the more elementary aspects of mathematics, the course emphasizes the solving of problems in technical areas. Topics include arithmetic revision, elementary algebra, and geometry.

MA 101 Algebra and Trigonometry I
5 Credits
5 Class Hours
An integrated treatment of algebra and trigonometry covering linear and quadratic equations, functions and graphs, factoring, systems of linear equations, trigonometric functions, and solving right and oblique triangles.

MA 102 Algebra and Trigonometry II
5 Credits
5 Class Hours
A continuation of MA 101 including exponents and radicals, logarithms, complex numbers, inequalities, variation, equations of higher degree and trigonometric identities and equations.
Prerequisite: MA 101

MA 103 Applied Calculus
4 Credits
4 Class Hours
A presentation of the basic concepts of differentiation, integration and their applications to the physical sciences and engineering. Also included are selected topics from plane analytic geometry.
Prerequisite: MA 102

MA 104 Geometry
4 Credits
4 Class Hours
A course intended to enhance the student's comprehension of the conceptual structures, form and size, and their communication and manipulation by means of symbols. Topics covered include plane figures and their measurement, triangles and circles, geometric solids, cylinders, pyramids, cones, and spheres.

MA 140 Computation
5 Credits
5 Class Hours
An introduction to the basic principles of statistics and probability. Topics include visual description of data, measures of location, measures of variation, sampling, probability, and sampling distributions.
Prerequisite: MA 102

MA 141 Business Mathematics I
4 Credits
4 Class Hours
An introduction to mathematical systems with emphasis on business applications.

MA 142 Business Mathematics II
4 Credits
4 Class Hours
Mathematical systems are analyzed, and structures of mathematics are examined. Relations and operations and topics from algebra are presented.
Prerequisite: MA 141

MA 143 Business Mathematics III
4 Credits
4 Class Hours
An introduction to statistics and probability. Topics include visual description of data, measures of location, measures of variation, sampling, probability, and sampling distributions.
Prerequisite: MA 142

MA 204 Probability and Statistics
3 Credits
3 Class Hours
An introduction to the basic principles of statistics and probability. Topics include visual description of data, measures of location, measures of variation, sampling, probability, and sampling distributions.
Prerequisite: MA 102
PHYSICS

PH 100 Introductory Physics
4 Credits
3 Class Hours, 3 Lab Hours
An introductory study of selected topics in physics involving a minimum of mathematics. Topics discussed include energy, basic electricity, wave motion and light, and physics of the atom as well as some interesting recent developments in physics.
Prerequisite: PH 101 and MA 101

PH 103 Physics of Heat, Light and Sound
4 Credits
3 Class Hours, 3 Lab Hours
An introduction to wave motion, sound, thermodynamics, light, and optics.
Prerequisite: PH 101 and MA 101

READING AND DEVELOPMENTAL STUDIES

EN 100 Basic Writing Skills
3 Credits
3 Class Hours
A course designed to improve the individual student's basic writing skills, particularly in the areas of sentence structure and logical development of ideas. Grammar is studied as necessary to promote clarity and logic.

MA 100 Elementary Algebra
5 Credits
5 Class Hours
Intended to provide a basic knowledge of algebra and to build skills in the use of the more elementary aspects of mathematics, the course emphasizes the solving of problems in technical areas. Topics include arithmetic review, elementary algebra, and geometry.

MA 140 Computation
5 Credits
5 Class Hours
A study of the basic topics of arithmetic with emphasis on their practical uses. The following topics are included: Place value, whole numbers, rational numbers, decimal numbers, ratio and proportion, and percent.

RD 100 Study Skills Improvement
3 Credits
3 Class Hours
Explanation and applications of the SQ4R method of studying (Survey, question, read, recite, review) plus other techniques to help the student study more efficiently.

RD 101 Reading Improvement
4 Credits
4 Class Hours
This course is designed to help students improve reading comprehension, speed, and vocabulary. Emphasis is also placed on stimulating a lasting interest in independent study.
RD 102 Technical Reading
3 Credits
3 Class Hours
This course introduces the student with at least average reading ability to special skills and techniques needed to read technical material. Topics covered include the use in technical writing of examples, classification comparison and contrast, illustrations, and specialized vocabulary.

RD 103 Speed Reading
1 Credit
1 Hour
In this course the student will learn and apply practices which contribute to selective and rapid reading of printed material. Learning experiences will include the use of Educulture tape presentations and individual workbook, as well as discussion and related supplemental materials.

SOCIAL SCIENCES

PS 151 Developmental Psychology I
4 Credits
4 Class Hours
This course is specifically designed for Allied Health majors and acquaints the students with concepts and theories of psychological development from infancy through adolescence. Emphasis is placed upon psychological implications and treatments of both mental and physical illness during this period.

PS 152 Developmental Psychology II
4 Credits
4 Class Hours
A continuation of PS 151 including the concepts of development through adulthood and old age. Emphasis is placed upon psychological implications of illness, old age, and dying.
Prerequisite: PS 151

SC 101 Human Relations
3 Credits
3 Class Hours
An experiential study of human interaction in the business and industrial complex. Emphasis is placed on the necessity of a cooperative environment to satisfy individual needs and to increase productivity.

SC 102 Applied Psychology
3 Credits
3 Class Hours
An introduction to those general principles of psychology which are most applicable to the everyday lives of students, emphasizing the transactional analysis approach.
EVENING AND SPECIAL PROGRAMS DIVISION

The Evening and Special Programs Division serves as an extension of State Tech to meet the needs of the working students of Knoxville and the surrounding area. All courses offered regularly in the day school may be offered in the evening program upon sufficient demand. In addition to the credit courses leading to the Associate Degree in each technology, special college credit and non-credit courses reflecting the needs of business, industry, schools, or governmental agencies may be organized at the request of a sufficient number of interested persons.

Additionally, State Tech offers programs for special interest groups and certificates in the following areas:

- Emergency Medical Technology
- Photography
- Insurance
- Real Estate
- Land Surveying
- Water and Wastewater
EMERGENCY MEDICAL TECHNOLOGY
Certificate Program

This one-year certificate program which trains Emergency Medical Technicians-Advanced Paramedics in the East Tennessee region is designed to administer advanced emergency care under the direction of a physician to victims of accidents and in acute medical emergencies. There is a great need to provide advanced life support for patients with critical care needs who are being transferred into tertiary care hospitals. Only students who work full-time for a licensed ambulance service as emergency medical technicians for a minimum of one year may apply.

EMT CURRICULUM

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EMT COURSE DESCRIPTIONS

EM 201 The EMT - Advanced
2 Credits
2 Class Hours
The role of Emergency Medical Technical-Paramedics in the health care delivery system is discussed. The duties and responsibilities of EMT's as well as any legislation affecting their job performance are covered. In addition, the students discuss issues concerning the EMT, including medical ethics and reaction to death and dying.

EM 202 Human Systems and Patient Assessment
5 Credits
4 Class Hours, 3 Lab Hours
This course includes an overview of anatomy and physiology of each body system. The use of medical terminology and the construction of medical terms using roots and prefixes are also included. In addition, the course deals with the procedure for a patient assessment, including the patient's medical history, physical examination, and transfer of collected information to the supervising physician.

EM 210 Shock and Fluid Therapy
4 Credits
3 Class Hours, 3 Lab Hours
Included in this course is a discussion of the fluids and electrolytes in the body with emphasis placed upon the manifestation of fluid and electrolyte imbalances. The manifestations of dehydration and overhydration are also included. The course also deals with the causes, signs, and symptoms of shock, fluid administration through intravenous techniques, and the application of the Medical Anti-Shock Trousers (MAST).

EM 220 Respiratory System
4 Credits
3 Class Hours, 3 Lab Hours
This course begins with a discussion of the anatomy and physiology of the respiratory system and the assessment of a patient with suspected respiratory distress. Pathophysiology, including respiratory arrest, upper airway obstruction, obstructive airway diseases, toxic inhalations, pulmonary edema, hyperventilation syndrome, pulmonary embolism, and trauma, are also discussed. Techniques of management of the previously defined include oxygen administration, use of adjunctive equipment, direct laryngoscopy, endotracheal intubation, esophageal obturator airway, and suctioning, among others.

EM 221 Cardiovascular System
6 Credits
5 Class Hours, 3 Lab Hours
The course begins with a discussion of the anatomy and physiology of the cardiovascular system, with emphasis upon the structure, function and electrical conduction system of the heart. Then the assessment of the patient with suspected cardiovascular problem is discussed. Pathophysiology is also covered including coronary artery disease and angina, acute myocardial infarction, cardiogenic shock, syncope, trauma, and hypertensive states. In addition, the course deals with the interpretation and treatment of basic arrhythmias. Specific techniques covered include cardiopulmonary resuscitation, electrocardiographic monitoring, defibrillation, phlebotomy, carotid sinus massage, intracardiac injection, transthoracic pacemakers, and use of mechanical heart-lung resuscitators.

EM 222 Central Nervous System
1 Credit
1 Class Hour
This course includes the anatomy and physiology of the nervous system and
the procedure for the assessment of a patient with a nervous system disorder. The pathophysiology and management of patients, presented with CNS trauma, seizures and cerebrovascular accident, are discussed. In addition, management of the comatose patient is covered. Specific treatments discussed include spinal immobilization in cases of trauma and the administration of diazepam in cases of seizures.

**EM 223 Musculoskeletal System**

3 Credits
3 Class Hours

This course includes the anatomy and physiology of the musculoskeletal system, patient assessment, and management of sprains, strains, fractures and dislocations. Skills presented include splinting and immobilization techniques with the traction splint, air splint and board splint.

**EM 224 Soft Tissue Injuries**

3 Credits
3 Class Hours

This course includes the anatomy and physiology of the integument and the assessment and management of soft tissue injuries, including abrasions, lacerations, punctures, avulsions, burns and impaled object. Skills presented in this course include control of hemorrhage and the dressing and bandaging of specific injuries. Also, injuries to specific regions, including the eye, face, neck, and abdomen, are discussed.

**EM 225 General Pharmacology**

3 Credits
3 Class Hours

This course is designed to introduce the student to the general groups of drugs and the classification of each. The course also discusses the kind of information the student should know about each drug, specifically therapeutic effect, indications, contraindications, correct dosage, and side effects. In addition, the course deals with the calculation of dosages, the use of the metric system, and the administration of drugs through the various routes.

**EM 230 Arrhythmia Identification and Treatment**

5 Credits
4 Class Hours, 3 Lab Hours

This course prepares the paramedic for specific identification and treatment of all major cardiac arrhythmias. Specific treatment includes: use of major cardiac drugs, positioning for transport, defibrillation, and other treatment methods.

**EM 240 Medical Emergencies**

3 Credits
3 Class Hours

The identification and management of diabetic emergencies, anaphylactic reactions, exposure to environmental extremes, alcoholism, poisoning, acute abdomen, genitourinary problems, and medical emergencies of the geriatric patient are the topics highlighted by this course.

**EM 241 Obstetric Gynecologic Emergencies**

4 Credits
3 Class Hours, 3 Lab Hours

This course includes the anatomy and physiology of the female reproductive system and the technique for assessment of a patient with suspected obstetric and/or gynecologic disorder. The course also includes the management of an expectant mother, normal delivery, and the care and transportation of the mother and newborn. Abnormal deliveries such as multiple births, premature birth, breech birth and prolapsed umbilical cord are discussed. In addition, complications of labor and delivery, including postpartum hemorrhage, ruptured uterus, eclampsia, and infant resuscitation are reviewed.
EM 242 Pediatrics and Neonatal Care

3 Credits
3 Class Hours
This course deals with the unique aspects of assessing pediatric patients. It also includes the pathophysiology and management of problems which are primarily seen in pediatric patients, including asthma, bronchiolitis, croup, epiglottis, sudden infant death syndrome and seizures in the pediatric age group. In addition, the course covers the role of the EMT in a system for a neonatal transport. The specific skills include a review of infant resuscitation, intravenous techniques and tracheal intubation on the infant.

EM 243 Management of the Emotionally Disturbed Patient

3 Credits
3 Class Hours
This course covers the various kinds of psychological problems the EMT might encounter, and specific procedures for handling each are included.

EM 250 Telemetry and Communications

3 Credits
3 Class Hours
The use of radio communications equipment including the transmission of voice communications and EKG transmission are covered. The course also includes a discussion of the regulations established by the Federal Communications Commission with respect to the use of radio equipment. In addition, the course deals with the protocols and procedures for the transfer of information to the supervising physician.

EM 260-261 Clinical Training

4 Credits
0 Class Hours, 12 Lab Hours
This part of the program is comprised of time spent in various area hospitals, clinics, field trips, etc. Major emphasis will be placed on coronary care, intensive care, emergency room, labor and delivery, morgue, pediatrics, operating room, recovery room, psychiatric units, and ambulance experience.
INSURANCE
Certificate Program

State Tech offers a certificate in the area of General Insurance to students completing three courses sponsored by the Insurance Women of Knoxville:

IN 121 General Principles of Insurance 4.5 Credits
IN 122 Advanced Property Insurance 4.5 Credits
IN 123 Casualty Insurance 4.5 Credits

IN 121 General Principles of Insurance

4.5 Credits
3 Class Hours
Basic principles that underlie the entire field of insurance, as well as the nature and operation of the insurance business are covered.

IN 122 Advanced Property Insurance

4.5 Credits
3 Class Hours
Primary emphasis is placed on understanding coverages, policy provision, and concepts common to property insurance. Contracts and forms studied include the standard fire policy, extended coverage endorsement, dwelling and contents forms, bailees', customer's policy, and the property coverages provided by multiple line contracts.

IN 123 Casualty Insurance

4.5 Credits
3 Class Hours, 0 Lab Hours
This course includes topics such as coverages, policy provisions, and concepts common to liability insurance policies, suretyship, and liability insurance aspects of multiple-line contracts, and life, health, and social insurance coverages.

A second area of certification is also sponsored by the Insurance Institute of America for Chartered Property Casualty Underwriters. To receive the certificate from State Tech a student is required to present evidence that the following ten courses have been completed successfully.

IN 132 Personal Risk Management and Insurance (CPCU 3)

6 Credits
3 Class Hours, 20 Week Course
This course will apply the risk management process and concepts to individual and family exposures. The readings and case studies will illustrate the role of property and liability insurance, life and health insurance, social insurance, employee benefits, and coordinated insurance buying in personal risk management.

IN 133 Commercial Property Risk Management and Insurance (CPCU 3)

6 Credits
3 Class Hours, 20 Week Course
This course will begin with commercial property risk analysis and measurement and then examine the major commercial property policies and forms: fire and allied lines, business in-

*The three courses in the Program of Insurance, i.e., IN 121, IN 122, and IN 123 may be substituted for IN 132.
turbation, ocean and inland marine, crime and combination policies. Noninsurance techniques, such as loss and control and risk transfer, will also be discussed.

IN 134 Commercial Liability Risk Management and Insurance (CPCU 4)

6 Credits
3 Class Hours, 20 Week Course
This course will analyze the major sources of liability loss exposures and then examine the insurance coverages designed to meet those exposures. Premises and operations, products and completed operations, contractual and protective liability, employers liability, worker’s compensation, motor vehicles, and professional liability will be discussed along with surety bonds. It is strongly recommended that IN 133 be taken before IN 134. The survey cases in this course will presume a knowledge of IN 133 and cover both property and liability insurance.

IN 135 Insurance Company Operations (CPCU 5)

6 Credits
3 Class Hours, 20 Week Course
This course will examine insurance marketing, underwriting, reinsurance, rate making, claims adjusting, lost control activities, and other insurer functions and activities.

IN 136 The Legal Environment of Insurance (CPCU 6)

6 Credits
3 Class Hours, 20 Week Course
This course will be based on general business law, particularly the areas of contract and agency law, and will emphasize the application of business law to insurance situations.

IN 137 Insurance Management (CPCU 7)

6 Credits
3 Class Hours, 20 Week Course
This course will cover general management principles and will include an introduction to management information systems.

IN 138 Accounting and Finance in Insurance (CPCU 8)

6 Credits
3 Class Hours, 20 Week Course
The first nine topics of this course will provide a generalized collegiate-level treatment of basic accounting and finance principles. The final six topics will specifically relate to property and liability insurance company accounting and finance.

IN 139 Economics in Insurance (CPCU 9)

6 Credits
3 Class Hours, 20 Week Course
This course will cover general economic principles at both the macro and micro levels.

IN 140 Insurance Issues and Professional Ethics (CPCU 10)

6 Credits
3 Class Hours, 20 Week Course
The first twelve assignments in this course will analyze significant problems and issues that impact on the insurance industry. The three concluding assignments will focus on professional ethics in general and the American Institute Code of Professional Ethics in particular.
LAND SURVEYING
Certificate Program

Due to the recent increase in land development, real estate values, and the approach of EXPO '82, the demand for land surveyors exceeds the number of people adequately trained in this field in the greater Knoxville area. In response to this need, a program in land surveying was developed as part of State Tech's continuing effort to provide high-quality technical training for residents of Knoxville and surrounding counties.

The program consists of five courses. Each course meets three hours a night, one night a week, for ten consecutive weeks. Field work is held every other Saturday morning. Courses in the program include:

MA 132 Mathematics for Surveyors
CT 161 Fundamentals of Surveying
CT 162 Transit-Tape Surveying and Computations
CT 163 Land Surveying
CT 164 Route Surveying and Subdivision Design

LAND SURVEYING COURSE DESCRIPTIONS

MA 132 Mathematics for Surveyors
The purpose of this course is to equip students with the fundamentals of mathematics required to make surveying computations. This course, or its equivalent, is a prerequisite for other courses in the program. Prior to registering for this course, a student must take State Tech's algebra placement test. The test requires twenty minutes and is offered in the Evening and Special Programs Office between 8:00 a.m. and 4:00 p.m. Monday-Friday. The placement test should be taken as soon as possible.

This course covers general information, fundamentals of algebra, computations, fundamentals of geometry, fundamentals of trigonometry, and basic analytic geometry.

CT 162 Transit-Tape Surveying and Computations
4 Credits
3 Class Hours

This course emphasizes the use of the transit and tape in traversing and the use of data collected in the field. Horizontal and vertical curves are also covered. Other topics covered are: use of transits and theodolites, measurements of angles and directions, transit-tape surveys, traverse computation, special case computation, horizontal and vertical curves, stadia method, and earth work. This course may be substituted into the Construction Engineering Technology curriculum for CT 221 Surveying II.

Prerequisite: CT 161
CT 163 Land Surveying

3 Credits
3 Class Hours

This course places emphasis on the legal aspects of land surveying and astronomy. The course covers licensing, professionalism, inter-professional relationships, surveying documents, legal definitions and laws, principles of field astronomy, solar observations, and OSHA. This course may be substituted into the Construction Engineering Technology associate degree curriculum as a technical elective.

CT 164 Route Surveying and Subdivision Design

3 Credits
3 Class Hours

This advanced course incorporates land surveying fundamentals into a design project. This includes: review of surveying computation procedures, subdivision regulations, preliminary subdivision plans, final subdivision plans, and utility and grading plans. This course may be substituted into the Construction Engineering Technology associate degree curriculum as a technical elective.
STILL PHOTOGRAPHY
Certificate Program

State Tech presents a 27 credit-hour Still Photography Certificate program. The program has arisen due to the need of business and industry to have qualified people on staff who are able to handle photographic jobs.

This certificate program is designed to give the student practical skills in lighting, camera handling, black and white and color darkroom techniques. The program consists of 24 credit hours of required course work plus three hours of electives. A student submitting documented evidence of completing 27 hours of course work will be awarded a certificate of completion.

STILL PHOTOGRAPHY COURSE DESCRIPTIONS

AV 111 Still Photography I
3 Credits
3 Class Hours
This beginning class covers the study of the camera, film, lighting, composition, black and white film processing, contact printing and enlarging. Students are responsible for providing a camera, film and photographic paper.

AV 112 Still Photography II
3 Credits
3 Class Hours
Advanced work in lighting, camera controls, and use of lenses prepares the student for special topics such as slide copying, internegatives, and copy prints. Students are responsible for providing a camera, film, and photographic paper.
Prerequisite: AV 111

AV 113 Darkroom Techniques
3 Credits
3 Class Hours
Students in this course will be exposed to the study of developers for film and paper, developing techniques, and how they relate to contrast and grain. Topics covered are: how surfaces and textures relate to subject and mood, and printing controls, including cropping and burning-in. Students are responsible for providing a camera, film, photographic paper, and other miscellaneous supplies.
Prerequisite: AV 111

AV 114 Creative Darkroom
3 Credits
3 Class Hours
The study of special techniques is emphasized: solarization, base relief, photo montage, heat distortion, Kodak-}

lith, and posterization. Students are responsible for providing miscellaneous darkroom supplies.
Prerequisite: AV 119

AV 115 Advanced Darkroom
3 Credits
3 Class Hours
This course is designed for persons who have completed Darkroom Techniques successfully and wish further study in black and white printing techniques. The emphasis will be on producing professional quality prints. Students are responsible for providing miscellaneous darkroom supplies.
Prerequisite: AV 113

AV 116 Color Reversal Printing
3 Credits
3 Class Hours, 3 Lab Hours
This course covers the study of color printing directly from slides, with darkroom experience in the additive printing system. Students are responsible for providing miscellaneous darkroom supplies.
Prerequisite: AV 119

AV 118 Color Negative Printing
3 Credits
3 Class Hours
The study of printing techniques from a color negative is the emphasis of this
course. Darkroom experience in the subtractive printing system is also covered. Students are responsible for providing miscellaneous darkroom supplies.

Prerequisite: AV 119

AV 119 Color Theory

3 Credits
3 Class Hours

Students who desire additional experience in shooting color slides and advanced work in flash, copying, portrait table top and available light should take this course. Students are responsible for providing a camera, film, and photographic paper.

Prerequisite: AV 113

AV 117 Large Format Photography

3 Credits
3 Class Hours

This course deals with the modern view camera. Topics include four camera movements, controlling depth of field, controlling perspective, dealing with distortion and processing shut film. Students are responsible for providing a camera, film, and photographic paper.

Prerequisite: AV 112

AV 120 Nature Photography

3 Credits
3 Class Hours

Basically designed as a field course for the beginner in nature photography, this course includes techniques for lighting and photographing many plants and animals both in the field and the studio. Students are responsible for providing a camera, film, and photographic paper.

Prerequisite: AV 111

AV 275-276-277 Special Problems in Photography

3 Credits
3 Class Hours

Course provides the opportunity for individual study through the use of a customized special problem assigned by the instructor according to interest and ability of each student. Students will be expected to develop photographic projects under the guidance of the instructor. Projects can include selection of subject, lighting materials, study of composition, film developing, print preparation, and use of special darkroom techniques.

A student may register for this course a maximum of three times, using a progressively larger course number each quarter. This course may be used as an elective toward the photography certificate.

Prerequisite: Approval of ESP Division Head
REAL ESTATE
Certificate Program

The Real Estate Certificate Program is designed for the local real estate industry in compliance with the teaching objectives established by the Tennessee Real Estate Commission. The program satisfies the education requirements of the Tennessee Real Estate Broker's License Act of 1973, Section 62-1316 paragraph F for brokers and for affiliate brokers. It is a flexible program and allows an individual to specialize in any one of three areas.

A student submitting evidence of successful completion of the courses required for one of State Tech's three areas of certification will be issued a certificate of program completion. The three areas are:

GENERAL REAL ESTATE BROKERAGE
RE 101 Essentials of Real Estate 4.5 credits
RE 113 Real Estate Law 3.0 credits
RE 118 Real Estate Salesmanship 3.0 credits
RE 233 Real Estate Finance 3.0 credits

REAL ESTATE FINANCE AND APPRAISAL
RE 101 Essentials of Real Estate 4.5 credits
RE 113 Real Estate Law 3.0 credits
RE 210 Residential Appraising 3.0 credits
RE 233 Real Estate Finance 3.0 credits
RE 235 Real Estate Investments 3.0 credits

REAL ESTATE DEVELOPMENT
RE 101 Essentials of Real Estate 4.5 credits
RE 113 Real Estate Law 3.0 credits
RE 133 Introduction to Commercial Real Estate 3.0 credits
RE 210 Residential Appraising 3.0 credits
RE 244 Land Development, Marketing and Use Regulations 3.0 credits
RE 113 Real Estate Law
3 Credits
3 Class Hours
The legal bases, ramifications, and standing of real property contract instruments are studied in view of common law precedents, federal and state statutes and miscellaneous agency interpretations. This course will also investigate at length the implications of ethical conduct, and standard behavior as it relates to the brokerage of real property.

RE 118 Real Estate Salesmanship
3 Credits
3 Class Hours
Course examines examination of fundamental principles underlying real estate brokerage activities to provide a broad foundation for students interested in real estate and to provide sufficient coverage of materials for mastery of the Tennessee Real Estate Commission licensing examinations. Included are appropriate arithmetic calculations, sales contracts, and closing papers. Through a combination of instructor lectures, development of model problems, and exercises, students will be able to concentrate efforts in areas of their choice.

RE 133 Introduction to Commercial Real Estate
3 Credits
3 Class Hours
This course is designed for residential brokers or affiliate brokers who wish to expand their knowledge of commercial real estate. It will include fundamentals of commercial investments, development, financing, appraisal, leasing, city planning, and zoning. The status and trends of the current commercial real estate market will be explored as well as opportunities available to brokers in commercial real estate.

RE 203 Advanced Closing Lab
3 Credits
3 Class Hours
Real Estate brokerage sales statements and loan closing statements are studied in detail. Closing problems dealing with the proration of taxes and insurance, disbursement of funds, handling of fees and escrow accounts, etc., are taken from actual situations. The requirements of the Real Estate Settlement and Procedures Act of 1974 are examined. This course may be substituted for RE 201.
RE 210 Residential Appraising
3 Credits
3 Class Hours
This course introduces the student to three methods of appraising residential property: comparative sales, unit cost, and gross rent multiplier. Basic concepts such as the purposes of appraisals, value of property, neighborhood and site analysis, and market conditions are covered using appraisal terminology. Students will appraise their own and their classmates' properties as well as properties of decidedly high and low economic values. All three appraisal methods will be used, but emphasis will be placed on the comparative sales approach.

RE 233 Real Estate Finance
3 Credits
3 Class Hours
Basic sources of lending in the field of residential and income property are covered, including FHA, VA and conventional loans and sources of commercial loans for income property. Interim construction financing is also covered. Discussion of current events and trends in the housing and money markets are used to highlight the concepts.

RE 235 Real Estate Investments
3 Credits
3 Class Hours
The fundamental principles underlying successful real estate investments are examined. Finding opportunities, types of ownerships, income taxation and financing considerations are covered to enable the student to become more knowledgeable and successful in investing.

RE 244 Land Development, Marketing, and Use Regulations
3 Credits
3 Class Hours
The planning, development, marketing and land use strategies necessary to insure success in residential land development pertaining to clusters, planned unit developments, and regional development; road layout and lot sizing; and marketing strategies. In addition, the basic philosophies of land use, enabling legislation, zoning and subdivision ordinances, administrative policies and current environmental protection controls are reviewed.

RE 246 Real Estate Office Management
3 Credits
3 Class Hours
This course deals with the many new challenges confronting the real estate business today. As sales become more complex, so do management challenges. People in sales today demand more education, training, and better management communications to guide them toward more successful careers. The course directs itself to these points with discussions of the job of managers and their functions.
**WATER AND WASTEWATER TECHNOLOGY**  
Certificate Program  

The one-year Water and Wastewater Technology Certificate Program provides training in the appropriate areas and prepares the student for the certification exam for class 1, 2, and 3 water and wastewater treatment plant operators. This program has been developed in conjunction with the local CETA prime sponsor and is funded by that organization. It trains full-time and part-time water and wastewater treatment plant technicians for Knoxville and surrounding municipalities and industries.

<table>
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<th>CURRICULUM</th>
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<td>CH 153</td>
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<td>PH 101</td>
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<td>WT 104</td>
<td>Advanced Waterworks Technology</td>
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**Weekly Total:**

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**Quarterly Total:**

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WATER AND WASTEWATER TECHNOLOGY COURSE DESCRIPTIONS

BI 104 General Ecology

3 Credits
3 Class Hours, 3 Lab Hours
This course will consist of a survey of environmental problems and how the application of knowledge and understanding may be applied to these environmental problems. Relations between organisms and their environment, including human environmental problems, will be specifically investigated.

BI 154 Microbiology I

4 Credits
3 Class Hours, 3 Lab Hours
Microbiology I is a basic course in microbiology with emphasis on the microorganisms found in water and wastewater.

BI 154 Microbiology II

4 Credits
3 Class Hours, 3 Lab Hours
A continuation of Microbiology I with emphasis on applied microbiology.

WT 101 Operations, Maintenance, Safety

3 Credits
3 Class Hours
A stimulation of interest in the field of Water and Wastewater Technology is the objective of this course. This course is designed to teach the student basic fundamental principles and practices in wastewater treatment systems. Included in this course will be wastewater characterization, wastewater treatment methods, sludge handling, chlorination of wastes, treatment of industrial wastes, problem solving, dimensional analysis, and engineering laboratory practices.

WT 102 Hydraulics and Pumping Design

3 Credits
3 Class Hours, 3 Lab Hours
This course is designed to cover fundamental design principles and practices in wastewater collection systems, how to characterize wastewater, and an introduction to physical unit operations. Topics covered include determination of wastewater flow rates, hydraulics of collection systems, design of collection systems, pumps, wastewater characteristics, and physical unit operations.

WT 103 Advanced Water and Wastewater Technology Theoretical and Operational Aspects — Techniques and Industrial Problems

3 Credits
3 Class Hours
This course provides the theoretical basis and practical laboratory experience necessary to perform chemical examinations of water and wastewater. Topics covered include turbidity, color, standard solutions, pH, acidity, alkalinity, coagulation hardness, residual chlorine, chlorine demand, and dissolved oxygen.

WT 104 Advanced Waterworks Technology — Theoretical and Operational Aspects

3 Credits
3 Class Hours
This course provides the theoretical basis and practical laboratory experience necessary to perform chemical and physical examinations of water and wastewater. Topics covered include BOC, COD, nitrogen, solids, grease, activated sludge analysis, and phosphate.
WT 105-108 On-the-Job Training
3 Credits per course
20 Lab Hours
The purpose of this training is to assist the student in learning the normal operational procedures for a wastewater and water plant and to actually perform the procedures. He will learn to recognize emergency conditions, of the waste stream and the course of these conditions, to carry out the preventive maintenance procedures, and to recognize when corrective maintenance procedures are required. Safety features for the above operations will be stressed. Also, the student will learn how to prepare reports necessary for the plant's operations.
OTHER SPECIAL COURSES

BANKING

State Tech in cooperation with the Knoxville Chapter of the American Institute of Banking offers AIB national curriculum courses to employees of the banking industry. Thus, the student can not only complete AIB requirements but also receive college credit hours. The courses are taught by instructors who meet both the college and chapter qualifications.

*At this time, courses are open only to individuals employed by the banking industry.

**BK 106 Principles of Bank Operations**

4.5 Credits
3 Class Hours

This course presents the fundamentals of banking in a descriptive fashion so that the beginning banker may acquire a broad and operational perspective. It reflects the radical changes in banking policy and practice which have occurred in recent years. Topics covered are banks and the monetary system, negotiable instruments, the relationship of the commercial bank to its depositors, types of bank accounts, the deposit function, the payments function, bank loans and investments, etc.

**BK 110 Economics in Banking**

4.5 Credits
3 Class Hours

This basic course emphasizes theories and issues as they apply to banking. Class sessions are devoted to micro and macro economics and current developments in national and international arenas.

**BK 120 Marketing for Bankers**

4.5 Credits
3 Class Hours

This course presents the broad concepts and philosophies of marketing for bankers. Topics include marketing, information and research, product strategy, distribution, advertising, sales promotion, personal selling, pricing strategy, and methods of marketing planning.

**BK 131 Installment Credit**

4.5 Credits
3 Class Hours

This modular course emphasizes the pragmatic “how-to” details of installment credit. Topics covered are principles of credit evaluation, open-end credit, marketing bank services, collection policies and procedures, legal aspects, financial statement analysis, direct and indirect installment lending, leasing and other special situations, installment credit department management, insurance, and rate structure and yields.

**BK 203 Money and Banking**

4.5 Credits
3 Class Hours

This course presents the basic economic principles most closely related to the subject of money and banking in a context of topics of interest to present and prospective bank management. The book stresses the practical application of the economics of money and banking to the individual bank. Some of the subjects covered include structure of the commercial banking system; the nature and functions of money; banks and the money supply; cash assets and liquidity management; bank investments, loans, earnings and capital; the Federal Reserve System and its policies and operations.

**BK 213 Bank Management**

4.5 Credits
3 Class Hours

This course is based on the second edition of the text that presents new trends which have emerged in the philosophy and practice of management. The study and application of the principles outlined provide new and experienced bankers with a working knowl-
edge of bank management. It touches on objectives, planning, structure, control, and the interrelationship of various bank departments.

**BK 222 Introduction to Bank Data Processing**

4.5 Credits  
4.5 Class Hours  
This course is designed to familiarize the student with computerized data processing concepts as they apply to the everyday banking environment. It will begin with a description of a computer, programs and computer personnel and progress to how the users of computer services within a bank can best interface with the personnel responsible for it's day to-day operation.

**BU 131 Principles of Accounting I**

4.5 Credits  
3 Class Hours  
A course which includes basic principles of accounting theory and practice, analysis and recording of business transactions, business documents, books and controlling accounts, adjusting and closing entries and payroll accounting.

**BU 132 Principles of Accounting II**

4.5 Credits  
3 Class Hours  
A course which includes merchandise inventory, deferrals and accruals, fixed assets, systems and controls and partnership and corporate accounting.

**EN 110 Oral Communications in Banking**

4.5 Credits  
3 Class Hours  
This course affords the student an opportunity to develop listening and speaking skills. The initial emphasis on interpersonal and intrapersonal communication evolves into the assignment of formal speeches. Emphasis is practical and "bank" oriented.

**SC 161 Human Relations in Banking**

4.5 Credits  
4 Class Hours  
The interaction of people in the business, banking, and industrial complex and the problems confronting the student involving human relations in his social, political, and economic roles are presented here. Stress is placed on the need to satisfy human wants as applicable to the employer and the employee. Emphasis is placed on the necessity of maintaining a cooperative environment to satisfy the individual needs, yet maintaining increased productivity. This course also serves as an overview to enable the student to understand a highly-developed technical society and the commensurate problem areas. Special problems related to the banking industry are discussed in detail.
INDUSTRIAL COURSES

AC 161 Accounting Compilation and Review
3 Credits
3 Class Hours
This course is designed to provide the student with a working knowledge of compilation and review of various financial statements. Auditing standards as set forth by the American Institute of Certified Public Accountants are covered in detail. This course work satisfies educational requirements of the Tennessee Society of Public Accountants.

CT 197 Introduction to Building and Construction Cost Estimating
3 Credits
3 Class Hours
This course is designed for persons responsible for making labor, material, and time estimates from construction drawings and blueprints. Topics include plans and specifications, site investigations, construction equipment, labor, materials, and supplies, overhead and indirect costs, and profit. A blueprint reading course or previous experience is suggested.

CT 198 Basic Blueprint Reading
3 Credits
3 Class Hours
An introduction to interpreting blueprints, this course is designed to give the student a good foundation in determining dimensions and the designer's intent in layout by use of symbols, sections, elevations, plans and details. The course will include construction drawings in structural steel, reinforced concrete, timber, electrical, and mechanical installation.

CT 199 Advanced Blueprint Reading
3 Credits
3 Class Hours
Using the basic blueprint reading course as a foundation, this advanced course will develop with greater detail the student's understanding of architectural, structural, mechanical, and electrical drawings. Course material will include, but not be limited to, an indepth study of both a reinforced concrete and a steel structure. Using shop drawings, slide presentations, and field trips to the structures under study, the students will be able to obtain a better understanding of the factors involved in reading prints.

EM 108 Emergency Care Course
1.5 Credits
1.5 Class Hours
Designed for the general public who may or may not have had any first aid training. Subjects covered are: Cardio-pulmonary resuscitation (CPR), clearing obstructed airways, proper splinting of fractures and dislocations, and emergency childbirth procedures. Successful completion of this course will earn participants a certificate of completion from Emergency Medical Services, Department of Public Health for the State of Tennessee.

EM 109 Emergency Medical Care Course
4 Credits
4 Class Hours
Individuals taking this course must have a certificate of completion from Emergency Care Course (EM 108) or hold a current certification from the Standard First Aid Course (American Red Cross). This course is designed for industrial plant supervision, members of police departments, fire departments, and rescue squad personnel. Subjects covered include: review of subjects covered in EM 108 plus spine board application, extrication of victims from accident situations, use of res-
pirators and other emergency life saving equipment, and recognition of symptoms and treatment of poisoning. Successful completion of this course will earn participants certificate of completion from Emergency Medical Services, Department of Public Health for the State of Tennessee.

**EM 110 First Aid for Industry**

1 Credit  
9 Class Hours

This course is designed to provide instruction in first aid practices for industry. Upon completion of the course, the student should be able to give immediate first aid care to injured individuals and satisfy OSHA and TOSHA requirements stipulating that a percentage of workers with industry be trained in first aid. Successful completion of the course will earn certification in the American Red Cross, Standard First Aid Multimedia System.

**EN 214 Business Letter Writing for Managers**

3 Credits  
3 Class Hours

This course is designed to make letter writing easier and to improve business communications. It deals with eliminating outdated and overused words and phrases; punctuation and grammar; different types of business letters; improving dictation methods; and time-saving methods.

**ET 198 Industrial Electricity**

3 Credits  
3 Class Hours

This course is specifically designed for persons working as industrial electricians in the industrial environment or toward that goal. It can provide refresher background for those with some experience or serve as a starting point.

**IM 116 Management for First Line Supervisors**

3 Credits  
3 Class Hours

This course is constructed to introduce and orient a new first-level supervisor and the middle manager to the duties of supervision. It is designed to improve the performance of personnel on these jobs and to prepare them to advance to higher positions. It is also a good refresher course for a supervisor who has been on the job for some time and desires to acquire new knowledge of concepts for dealing with personnel.

**MC 161 Industrial Lubricants**

2 Credits  
2 Class Hours

After completion of this course, the trainee should be able to demonstrate knowledge of lubrication by being able to discuss the need, sources, and properties of the three classifications of lubricants. The trainee should be able to itemize the more important, or the more frequently encountered, operating conditions and show the relationship between them, the physical properties of lubricants, and the standard classification of lubricants. Trainees should be able to set up a Simple Lubrication Preventive Maintenance Program and list the returns from such a program.

**ME 190 Industrial Safety**

3 Credits  
3 Class Hours

American industry has two jobs to perform in the safety area. First, it must provide a safe environment from a production standpoint. Since the enactment of the Occupational Safety and Health Act of 1970, it also has a new job of law compliance. It is the intent of this course to introduce the student to the concepts of industrial safety and draw together some approaches to the problem of complying with OSHA.

**ME 191 Fluid Power I**

3 Credits  
3 Class Hours

This study of fluid mechanics empha-
sizes the use of hydraulics and pneumatics for power transmission and control purposes. The course covers fluids and their properties, hydraulic principles on linear systems, seals and packings, and an introduction to pneumatics.

ME 192 Fluid Power II

3 Credits
3 Class Hours
As a continuation of ME 191, this course covers the techniques for calculating the fluid flow rate and velocities in a given fluid system, methods for calculating the total energy in a fluid system, laminar and turbulent flow, and friction factors and pressure drops in systems.

ME 193 Precision Instrument and Blueprint Reading

2 Credits
2 Class Hours
This course is designed to provide the student with the basic understanding and proper use of precision measuring instruments, involving elementary blueprint reading. The course will enable the student to visualize and draw elementary three-dimensional views of a machine part, read various precision measuring instruments, judge both bilateral and unilateral tolerances, and inspect a machine part from a blueprint.

ME 194 Intermediate Precision Instrument and Blueprint Reading

2 Credits
2 Class Hours
This course is designed for the student who has a basic knowledge of blueprint reading and desires to become more proficient in reading more complicated blueprints. The student will also be taught to visualize and draw more complicated three-dimensional views of machine parts and be able to inspect those parts using both simple and sophisticated measuring instruments.

INSURANCE COURSES

In addition to the two certificate programs, State Tech offers a third program in insurance. Rather than being a certificate program, it is a series of 10 courses designed to prepare students for the examination for Certified Life Underwriters (CLU). Courses are offered on a basis determined by the Knoxville CLU Chapter.

HS 301 Economic Security and Individual Life Insurance

3 Credits
3 Class Hours
This course covers economic security needs, human behavior, professionalism and ethics in life and health insurance as well as individual life, health and annuity contracts and life insurance programming. Additional types include types of insurers, investments, financial statements, risk selection, taxation, and regulation of companies.

SC 140 Career Options for Women

3 Credits
3 Class Hours
This is a ten week in-depth course which helps the woman to learn where the jobs are; make the transition from the home to the job market; analyze her abilities and interests; manage her finances; develop a resume; learn the do's and don'ts of interviewing; and make the most of her appearance.

HS 302 Life Insurance Law and Mathematics

3 Credits
3 Class Hours
Legal aspects of contract formation, policy provisions, assignments, ownership rights, creditor rights, beneficiary designations, and disposition of life ins-
surance proceeds. Also covered is the mathematics of life insurance as related to premiums, reserves, nonforfeiture values, surplus, and dividends.

**HS 303 Group Insurance and Social Insurance**

3 Credits  
3 Class Hours  
Analysis of group life and health insurance, including products, marketing, underwriting, reinsurance, premiums, and reserves. Also, various governmental programs related to the economic problems of death, old age, unemployment, and disability.

**HS 304 Economics**

3 Credits  
3 Class Hours  
Economic principles, the governmental and banking institutions which have an effect on the national economy, national income, theory and application of price determination, business cycles, money and banking, monetary and fiscal policy, and international trade and finance.

**HS 305 Accounting and Finance**

3 Credits  
3 Class Hours  
Basic accounting principles, including data accumulation systems, income measurement, valuation of assets and liabilities, and financial statement analysis. The accounting process from the recording of a business transaction in the books of account to the final preparation of financial statements. Various sources of short-term funds available to business enterprise.

**HS 306 Investments and Family Financial Management**

3 Credits  
3 Class Hours  
Various aspects of investment principles and their application to family finance. Yields, limited income securities, investment markets and valuation of common stock. Also family budgeting, property and liability insurance, mutual funds, variable annuities, and aspects of other investment media.

**HS 307 Income Taxation**

3 Credits  
3 Class Hours  
The federal income tax system with particular reference to the taxation of life insurance and annuities. The income taxation of individuals, sole proprietorships, partnerships, corporations, trusts, and estates.

**HS 308 Pension Planning**

3 Credits  
3 Class Hours  
Basic features of pension plans. Cost factors, funding instruments, and tax considerations involved in private pensions, profit-sharing plans, and tax-deferred annuities. Also, thrift and savings plans and plans for the self-employed. Effect of Employees Retirement Income Security Act of 1974 on covered areas.

**HS 309 Business Insurance**

3 Credits  
3 Class Hours  
Business uses of life and health insurance, including proprietorship, partnership, and corporation continuation problems and their solutions through the use of buy-sell agreements properly funded to preserve and distribute business values. Other business uses of life and health insurance, such as key man insurance, non-qualified deferred compensation plans, and split-dollar plans. Also covered are corporate recapitalizations, professional corporations, and business uses of property and liability insurance.
HS 310 Estate Planning and Taxation

3 Credits
3 Class Hours
Estate and tax planning, emphasizing the nature, valuation, disposition, administration, and taxation of property. The use of revocable and irrevocable trusts, testamentary trusts, life insurance, powers of appointment, wills, lifetime gifts, and the marital deduction. Also, the role of life insurance in minimizing the financial problems of the estate owner.

REVIEW COURSES

CT 175 Certified Engineering Technician Review — Civil

3 Credits
3 Class Hours
A review concentrating on the general areas covered on the civil engineering technology examination administered by the Institute for the Certification of Engineering Technicians. Topics covered include surveying, earthwork, soil mechanics, plain concrete, hydraulics, highway design and route surveying, statics, strength of materials, environmental technology, construction materials and inspection.

ET 175 Certified Engineering Technician Review — Electrical

3 Credits
3 Class Hours
A review concentrating on the general areas covered on the electrical — electronics engineering technology examination administered by the Institute for the Certification of Engineering Technicians. Topics covered include basic technical concepts, pulse electronics, communications, electronics, solid state circuit design, computer, test equipment, electric power systems and power.

ET 176 Certified Engineering Technician Review — Electrical Power

A review concentrating on the areas covered on the electrical power technology examination administered by the Institute for the Certification of Engineering Technicians. Topics covered include power distribution, production, transmission, and sub-station operation, in addition to codes and standards, phasing, problem analysis, insulator requirements, and conductor selection and spacing.

GS 101 GED Preparation

3 CEU's
3 Class Hours
General Education Development Program is designed to assist persons who wish to take the GED test and achieve the equivalence of a high school diploma. The course covers basic skills in reading, composition, and math. The program will be a ten-week course of study.

GS 175 Certified Engineering Technician Review — General

3 Credits
3 Class Hours
A review concentrating on the areas covered on Part A — General Examination administered by the Institute for the Certification of Engineering Technicians. Topics covered include communications skills, reading and vocabulary, technical phrasing, business correspondence and reports, graphics, mathematics, formulae and symbols for physical science.
ME 175 Certified Engineering Technician Review — Mechanical
3 Credits
3 Class Hours
A review concentrating on the general areas covered on the mechanical engineering technology examination administered by the Institute for the Certification of Engineering Technicians. Topics covered include technical fundamentals, strength of materials, machine design, heating ventilating and air conditioning, pressure vessels and piping, hydraulics, instrumentation, materials handling, power transmission, welding and fastening and basic electricity.

PA 199 Parliamentary Procedure
3 Credits
3 Class Hours
How to lead or participate in a business meeting is the purpose of this course. Aimed especially at club or organization members and officers, the course will cover Robert's Rules of Order. Students will be involved in actual practices of parliamentary procedure.
GOVERNANCE AND ADVISORY COMMITTEES
STATE BOARD OF EDUCATION
Governor Lamar Alexander
Robert L. McElrath, Executive Officer
100-A Cordell Hull Building
Nashville, Tennessee 37219

G. Wayne Brown
Jan Buxton
Stephen Dennis
H. Lynn Greer, Jr.
Florence Leffler
Hugh T. McDade
May Alice Ridley
Eleanor Rooks
Nannie G. Rucker
F. Thornton Strang
John Seward
Billy Ray Vinson
Kenneth Witcher
Joleta Reynolds, Administrative Assistant
for the State Board of Education

Nashville
Oak Ridge
Mason
Nashville
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Alcoa
Nashville
Brownsville
Murfreesboro
Chattanooga
Elizabethtown
Adamsville
Red Boiling Springs
Nashville
BANKING AND FINANCE ADVISORY COMMITTEE
Lawrence D. Brothers
Knoxville Computer Center
P. O. Box 5661
Knoxville, Tennessee 37918

Wanda Coker
Administrative Assistant
United American Bank
P. O. Box 280
Knoxville, Tennessee 37901

Claudia McCorkle
First American Bank
1185 Keowea Avenue
Knoxville, Tennessee 37919

Helen Seymour
First Tennessee Bank
P. O. Box 5548
Knoxville, Tennessee 37918

Thomas E. Tuck
City and County Bank
P. O. Box 2111
Knoxville, Tennessee 37901

BUSINESS DATA PROCESSING TECHNOLOGY ADVISORY COMMITTEE
Leon Binder
Manager Information Systems
Engineered Products, Inc.
P. O. Box 220
Dandridge, Tennessee 37725

Robert L. Clark, Director
Administrative Data Systems
University of Tennessee
103 Andy Holt Tower
Knoxville, Tennessee 37916

Bill Mumpower
Area Representative
Tennessee Valley Authority
149 Evans Building
Knoxville, Tennessee 37902

Linda Proffitt
Systems Support Analyst
Doyle Roesner
Sr. Account Manager
Nixdorf Computer
9051 Executive Park Drive
Suite 201
Knoxville, Tennessee 37923

Larry Stiles
Assistant Dean of Information Systems
University of Tennessee
Knoxville, Tennessee 37916
Tom E. Sudman
Executive Vice-President of Retail & Administration
Ralph Johnston
United American Bank
P. O. Box 280
Knoxville, Tennessee 37901

Bob Welch
Data Processing Manager
Southern Athletic, Inc.
2801 Red Dog Lane
Knoxville, Tennessee 37914

Robert Wildsmith
Systems Supervisor
Data Processing
Knoxville Utilities Board
P. O. Box 1951
Knoxville, Tennessee 37901

George Wilson
Research Staff Member II
Union Carbide Corporation
Building 9704-1
P. O. Box Y
Oak Ridge, Tennessee 37830

CHEMICAL ENGINEERING TECHNOLOGY
ADVISORY COMMITTEE

O. L. Culberson
Department of Chemical Engineering
University of Tennessee
Knoxville, Tennessee 37916

James M. Ford
Olin Corporation
P. O. Box 248
Charleston, Tennessee 37310

Tommy Huskey
Vinyllex Corporation
2636 Byington-Solway Road
Knoxville, Tennessee 37921

H. F. Johnson
Department of Chemical Engineering
University of Tennessee
Knoxville, Tennessee 37916

John R. McDowell
Noll Associates Tennessee, Inc.
1423 Coker Avenue
Knoxville, Tennessee 37917

Richard A. Miller
IT Envirosience Inc.
9041 Executive Park Drive
Knoxville, Tennessee 37923
Donald E. Spangler  
Oak Ridge National Laboratories  
P.O. Box X  
Building 7601  
Oak Ridge, Tennessee 37830

Bruce Tackes  
American Enka Corporation  
Lowland, Tennessee 37778

Rebecca L. Tate  
Chemical Separations Corporation  
1 Technology Drive  
Knoxville, Tennessee 37922

Jerald A. Turnbow  
Aluminum Company of America  
P.O. Box 158  
Alcoa, Tennessee 37701

Clyde D. Watson  
Oak Ridge National Laboratories  
P.O. Box X  
Building 7601  
Oak Ridge, Tennessee 37830

Jack Watson  
Rohm and Haas Tennessee, Inc.  
P.O. Box 59  
Knoxville, Tennessee 37901

COMPUTER ACCOUNTING TECHNOLOGY ADVISORY COMMITTEE
Don Bright  
Certified Public Accountant  
Main, Hudman, & Cranston, C.P.A.'s  
1926 United American Plaza  
P.O. Box 2505  
Knoxville, Tennessee 37901

John D. Brown  
Principle Financial Officer  
Elk River Resources, Inc.  
P.O. Box 10388  
Knoxville, Tennessee 37919

Charles J. Kinnamon  
Director of Human Resources  
Knoxville Utilities Board  
P.O. Box 1951  
Knoxville, Tennessee 37901

James G. McCoin  
Knox County, Director of Purchasing  
and Personnel  
Room 612  
City-County Building  
Knoxville, Tennessee 37901

Harold G. McLeod  
Division Controller  
Vulcan Materials Company  
P.O. Box 7  
Knoxville, Tennessee 37901
CONSTRUCTION ENGINEERING TECHNOLOGY
ADVISORY COMMITTEE

Virginia Morrow, C.P.A.
Author Anderson & Co.
507 Gay Street, S.W.
Suite 725
Knoxville, Tennessee 37902

Marvin T. Smoot
Controller
Knoxville News-Sentinel
208 Church Street
Knoxville, Tennessee 37901

Will J. Sullivan
Secretary-Treasurer
Institutional Jobbers, Inc.
P.O. Box 1831
Knoxville, Tennessee 37901

D. J. Vaughn
Controller
Appalachian Packaging Company
2708 National Drive
Knoxville, Tennessee 37914

Larry E. Wheeler
Supervisor of Nuclear Control
and Accounting
Union Carbide Corporation
P.O. Box P
Oak Ridge, Tennessee 37830

CONSTRUCTION ENGINEERING TECHNOLOGY
ADVISORY COMMITTEE

David H. Adams
David H. Adams Consulting Engineers
P.O. Box 11165
Knoxville, Tennessee 37919

Albert H. Barnes
Barnes & Moorefield Architects
P.O. Box 10863
Knoxville, Tennessee 37919

Theodore A. Bowles
Supervisor, Construction & Design
Engineering Section
Tennessee Valley Authority
400 Commerce Avenue
E6A2
Knoxville, Tennessee 37902

David Collins
E. T. E. Consulting Engineers Inc.
P.O. Box 3471
Oak Ridge, Tennessee 37830

Louis Colucci, Jr.
Chief, Engineering Support Services
Region 15, Federal Highway
Administration
P.O. Box 186
Sevierville, Tennessee 37862
Bill Evans
State Department of Transportation
Bureau of Highways
P.O. Box 58
Knoxville, Tennessee 37901

Joe Miller
West & Associates Engineers, Inc.
1630 Downtown West Blvd.
Knoxville, Tennessee 37919

Thomas C. Walton
Vice-President
Rentenbach Engineering Co.
P.O. Box 11087
Knoxville, Tennessee 37919

ELECTRICAL ENGINEERING TECHNOLOGY
ADVISORY COMMITTEE

Bill M. Adhami
Electrical Design Engineer
TVA 400 Commerce Avenue
WBA53
Knoxville, Tennessee 37902

Ray D. Alexander
Services Engineer
Electrical and Instrumentation
American Electric Corp.
Lowland, Tennessee 37778

Erron Anderson
Staff Engineer
Instrumentation Division
Technology for Energy Corporation
10770 Dutchtown Road
Knoxville, Tennessee 37922

Harry Bannon
Manager Systems Design Division
Robertshaw Controls Company
2318 Kingston Pike
Knoxville, Tennessee 37919

Benny L. Boggs
Tennessee Valley Authority
W2B120C-K
400 Commerce Avenue
Knoxville, Tennessee 37902
Donald Dossett  
Test Supervisor  
EG&G ORTEC, Inc.  
100 Midland Road  
Oak Ridge, Tennessee 37830

Steve Frye  
Commonwealth Edison Co.  
CRBR Project, P.O. Box U  
Oak Ridge, Tennessee 37830

Benny B. Hanzelka  
Electrical Engineering  
Union Carbide  
P.O. Box Y  
Building 9737  
Oak Ridge, Tennessee 37830

Les Hutton  
Manager of Component Engineering  
The Magnavox Company  
Strawberry Plains, Tennessee 37871

Herbert Linginfelter  
Foreman  
Oak Ridge National Laboratory  
Oak Ridge, Tennessee 37830

George W. Oliphant  
Building 2518  
Oak Ridge National Laboratory  
Oak Ridge, Tennessee 37830

Glenn Turney  
Tennessee Valley Authority  
400 Commerce Avenue  
Knoxville, Tennessee 37902

INSURANCE ADVISORY COMMITTEE

Glenda Setzkorn  
Tom T. Pace Insurance Agency  
608 S. Gay Street  
Knoxville, Tennessee 37902

Walter M. Wendel, CLU  
P.O. Box 10205  
Knoxville, Tennessee 37919

W. W. Dotterweich  
Finance Department  
Room 429  
Stokely Management Center  
University of Tennessee  
Knoxville, Tennessee 37916

Pat McGlothlin  
Mutual Insurance Agency, Inc.  
200 W. 5th Avenue  
Knoxville, Tennessee 37917

Russell G. Perkins  
Commercial Insurance Dept., Manager  
AETNA Casualty and Surety  
1401 United American Plaza  
Knoxville, Tennessee 37902
Jim Alderson
I.N.A.
P.O. Box 11146
Knoxville, Tennessee 37919

Henry Austin
Austin & Company
P.O. Box 32
Knoxville, Tennessee 37901

Bill Smith
The Tennessee Company
Old Kingston Pike
P.O. Box 10922
Knoxville, Tennessee 37919

LAND SURVEYING ADVISORY COMMITTEE
John Batson
Batson & Himes
4334 Papermill Road
Knoxville, Tennessee 37919

Robert Bowers
City Engineer
City of Knoxville
1400 Loraine Street
Knoxville, Tennessee 37921

Robert Campbell
Regional Location Engineer
Department of Transportation
P. O. Box 58
Knoxville, Tennessee 37901

Joe McDonald
Knoxville Utilities Board
P.O. Box 1951
Knoxville, Tennessee 37900

Don Olive
Carson Newman College
Jefferson, Tennessee 37760

G. T. Trotter
725 South Gay Street, LL-2
Knoxville, Tennessee 37902

MARKETING TECHNOLOGY ADVISORY COMMITTEE
Mark Balloff, Manager
Balloff's, West Town Mall
7600 Kingston Pike
Knoxville, Tennessee 37919

J. T. Brothers
Technical Assistance Center
Student Services Building
University of Tennessee
Knoxville, Tennessee 37916

Carroll Coakley, Chair
Distributive Education Dept.
128 Henson Hall
University of Tennessee
Knoxville, Tennessee 37916
Pat Coleman, Buyer
Proffitt’s Department Store
Midland Shopping Center
Alcoa, Tennessee 37701

Sam R. Cox, President
Lazy 7 Coal Sales, Inc.
166 Western Plaza
Knoxville, Tennessee 37919

Jack Kronenberg, General Manager
Knoxville Manufacturing Company
1904 Emory Road
Powell, Tennessee 37849

Rebecca Prince, Division Mgr.
Miller’s Department Store
600 Henley Street
Knoxville, Tennessee 37901

Mitchell Robinson, President
Jim Delaney, General Manager
Modern Supply Company
P.O. Box 2644
Knoxville, Tennessee 37901

Mary Linda Schwarzbarth
Comptroller
Knox Record Rack
P.O. Box 11167
Knoxville, Tennessee 37919

Ronald Stanley
Personnel Director
J. C. Penney Co.
Westown Mall
Knoxville, Tennessee 37919

Donald Stewart
J. P. Hogan & Co., Inc.
109 W. Fifth Avenue
Knoxville, Tennessee 37917

Ann Williams, Coordinator
Distributive Education
Bearden High School
8352 Kingston Pike, N.W.
Knoxville, Tennessee 37919

MID-MANAGEMENT TECHNOLOGY ADVISORY COMMITTEE
Sam Browder
Harriman Oil Company
General Delivery
Harriman, Tennessee 37748

Joel D. Coates
Sales Promotion and Training
Cumberland Clarklift, Inc.
P.O. Box 278
Knoxville, Tennessee 37901

Pay Crotty
Schlegel Tennessee Inc.
Blount County Industrial Park
Maryville, Tennessee 37801
Ann Gillenwater  
Chairman,  
Tennessee Commission on the  
Status of Women  
720 Chester Circle  
Maryville, Tennessee 37801

Marvin Hammond  
Manager of Employee Training and Development  
Knoxville Utilities Board  
P.O. Box 1951  
Knoxville, Tennessee 37901

W. J. (Bill) Handel, Jr.  
Corporation Director  
Engineering and Development  
Berkline Corporation  
One Berkline Drive  
Morristown, Tennessee 37748

Joanne R. Hedleston  
Organization and Compensation Supervisor  
Aluminum Company of America  
P.O. Box 9128  
Alcoa, Tennessee 37701

G. K. Laborde  
College of Education  
Industrial Education  
University of Tennessee  
Knoxville, Tennessee 37916

Larry E. Mailhos  
Personnel Manager  
Vinylex Corporation  
P.O. Box 7187  
Knoxville, Tennessee 37921

Peggy McBee  
Personnel Manager  
Anomalus, Inc.  
1621 E. Magnolia Avenue  
Knoxville, Tennessee 37917

Kay T. Myers  
Personnel Officer  
Tennessee Valley Authority  
400 Commerce Avenue, W50220C  
Knoxville, Tennessee 37901

Bradford M. Sayles  
President  
Blount County Industrial Board  
P.O. Box 528  
Maryville, Tennessee 37801

Doug Upton  
Plant Personnel Manager  
Levi Strauss and Company  
Beaver Creek Drive  
Powell, Tennessee 37849
Rudy Vranes
Industrial Relations Manager
Briggs
5040 National Drive
Knoxville, Tennessee 37917

Jay Ward
Manager
Employee Relations
Allied Chemical
1601 Midpark Lane
Knoxville, Tennessee 37821

Claudia Hoffner, R.N.
Director Continuing Education
East Tennessee Baptist Hospital
Knoxville, Tennessee 37920

Larry Hutsell
Consultant
Emergency Medical Services
Tennessee Department of Public Health
Knoxville, Tennessee 37919

Lona Lindsey, R.N.
Head Nurse
Emergency Department
East Tennessee Children’s Hospital
Knoxville, Tennessee 37916

Cindy Nicely, R.N.
Emergency Department
University of Tennessee Research Center
Hospitals
Knoxville, Tennessee 37920

PHOTOGRAPHY ADVISORY COMMITTEE
Don Dudenboestel
Davis-Newman-Payne Advertising
4700 Coster Road, NE
Knoxville, Tennessee 37912

Harley Ferguson
Photographer
3049 Sutherland Avenue
Knoxville, Tennessee 37919

PARAMEDIC ADVISORY COMMITTEE
Larry Conner
Consultant
Emergency Medical Services
Tennessee Dept. of Public Health
Johnson City, Tennessee 37601

Jim Decker
Hospital Administrator
Fort Sanders Presbyterian Hospital
Knoxville, Tennessee 37916

James E. Henry, M. D.
Physician Director
EMS Co-op
6800 Woodview Dr. SW
Knoxville, Tennessee 37920
Arthur W. Lavidge  
Lavidge & Associates Advertising  
Bearden Park Circle S. W.  
Knoxville, Tennessee 37919

Jim McGhee  
Camera’s Eye  
Oak Ridge, Tennessee 37830

Ernie Robertson  
Director of Photographic Services  
University of Tennessee  
Knoxville, Tennessee 37916

Jim Thompson  
Thompson Photographic Products  
2019 University Avenue, N.W.  
Knoxville, Tennessee 37921

Frank Thornburg  
School of Journalism  
University of Tennessee  
330 Communications & Extension Building  
Knoxville, Tennessee 37919

Bill Tracy  
Photographer  
Route 1  
Louisville, Tennessee 37777

Ron Warwick  
Photographer  
2921 Pershing Street, N.E.  
Knoxville, Tennessee 37917

Harry Whittington  
Photographer  
1318 E. Walnut Grove Rd., N.E.  
Knoxville, Tennessee 37918

REAL ESTATE ADVISORY COMMITTEE

Hop Bailey, Jr.  
Hop Bailey Co.  
Park National Bank  
Gay Street  
Knoxville, Tennessee 37901

Dan Culp  
Culp & Associates, Realtors  
600 Weisgarber Road  
Knoxville, Tennessee 37919

Jeff Fletcher  
Fletcher Realty  
1901 United American Plaza  
Knoxville, Tennessee 37929

John Price  
P.O. Box 7007  
Oak Ridge, Tennessee 37921

Jim Slyman  
Slyman Real Estate  
5722 Oak Ridge Highway  
Knoxville, Tennessee 37921
Gordon Smith  
Volunteer Realty Co.  
7824 Kingston Pike  
Knoxville, Tennessee 37919

Nelson Venable  
East Tennessee Title  
Insurance Agency, Inc.  
813 Market Street  
Knoxville, Tennessee 37902

H. Pat Wood, Sr.  
Wood Properties, Inc.  
Suite 1300  
United American Plaza  
Knoxville, Tennessee 37929

WATER AND WASTEWATER TECHNOLOGY  
ADVISORY COMMITTEE  

Hoyle E. Dake, Jr.  
Allied Chemical Corporation  
1601 Midpark Drive  
Knoxville, Tennessee 37921

Giles Dye  
Knoxville Utilities Board  
Water Plant  
P.O. Box 1951  
Knoxville, Tennessee 37901

Allan Gill  
Halisdale Powell Utility District  
3745 Cunningham Drive  
Knoxville, Tennessee 37918

Gayle Hodgson  
Knox County Wastewater Control  
Suite 207-B  
701 East Vine Avenue  
Knoxville, Tennessee 37915

Earl Leming  
Tennessee Water Quality Control  
1522 Cherokee Trail  
Knoxville, Tennessee 37920

Ed Malter, Chair  
WWCS — City of Knoxville  
2015 Neyland Drive  
Knoxville, Tennessee 37916

Jim Morton  
Knox County CETA  
2918 Magnolia Avenue  
Knoxville, Tennessee 37914

Tony Ortega  
WWCS — City of Knoxville  
2015 Neyland Drive  
Knoxville, Tennessee 37916
ADMINISTRATIVE STAFF
President’s Office
VRONDIELA G. CHANDLER: Administrative Assistant to the President
BARNEY MYERS: Interim President
B.S. in Industrial Education — The University of Tennessee, Knoxville
M.S. in Industrial Education — The University of Tennessee, Knoxville

JAN R. SONNER: Dean of Instruction
B.S. in Electrical Engineering — Rose Polytechnic Institute
M.S. in Electrical Engineering — University of Southern California
Ph.D. in Higher Education — Southern Illinois University, Carbondale
Additional Study in Electrical Engineering — University of Illinois, Urbana

JOSEPH D. WILSON: Head, Computer Services
B.S. in Mathematics — University of North Carolina at Charlotte

Academic Affairs
JANE CAMERON: Librarian
B.A. in Math — Vanderbilt University
M.L.S. in Library Science — George Peabody College for Teachers

NINA W. HAYDEN: Head, Educational Resource Center
B.A. in History — Arkansas State University
M.S. in Library Science — Florida State University

Micheal L. HUDSON: Head, Evening and Special Programs
B.S. in Personnel — University of Tennessee, Knoxville
M.S. in Industrial Education — University of Tennessee, Knoxville

Business Office
NARSH D. BENSON: Business Manager
B.S. in Mathematics — University of Southern Mississippi
M.S. in Accounting — University of Arizona CPA

LUHER B. FURROW: Accountant
B.S. in Accounting — University of Tennessee, Knoxville

LOWELL V. POLING: Maintenance Superintendent
B.S. in Commerce — University of Kentucky
M.B.A. — University of Kentucky

FRANK E. SHELL: Maintenance Supervisor

MARY ANN WALKLING: Accountant
A.S. in Accounting — Indiana Vocational Technical College

GEORGE WARLICK: Accountant
B.S. in Business Administration — Carson-Newman College

OPAL WEBB: Bookstore Manager
INSTRUCTIONAL FACULTY (FULL-TIME)

DENNIS R. ADAMS  Assistant Professor, Mathematics
B.A. in Mathematics — Bowling Green State University
M.A. in Education Administration — University of Alabama
Ph.D. in Secondary Education and Mathematics — University of Alabama

ANNABEL L. AGEE  Assistant Professor, Communications
B.S. in English — University of Tennessee, Knoxville
M.S. in Guidance — University of Tennessee, Knoxville

MARIAN L. BAILEY  Assistant Professor, Physics
B.S. E. in Physics — Concord College
M.S.E. in Physics — University of Tennessee, Knoxville
Additional Graduate Study in Physics — University of Tennessee, Knoxville

BOB BALLARD  Instructor, Business Data Processing
B.S. in Mathematics — Tennessee Technological University

CHARLES L. BRYANT  Division Head, Engineering Technologies; Associate Professor, Mechanical Engineering Technology
B.S. in Aerospace Engineering — Air Force Institute of Technology
M.S. in Aerospace Engineering — Air Force Institute of Technology

KARLA DUKES BURDETTE  Assistant Professor, Mathematics
B.S. in Mathematics — East Carolina University
M.A.T. in Mathematics — Converse College

LINDA CALVERT  Instructor, Mathematics
B.S. in Mathematics — Mississippi University for Women

INSTRUCTIONAL FACULTY (FULL-TIME)

DENNIS R. ADAMS  Assistant Professor, Mathematics
B.A. in Mathematics — Bowling Green State University
M.A. in Education Administration — University of Alabama
Ph.D. in Secondary Education and Mathematics — University of Alabama

ANNABEL L. AGEE  Assistant Professor, Communications
B.S. in English — University of Tennessee, Knoxville
M.S. in Guidance — University of Tennessee, Knoxville

MARIAN L. BAILEY  Assistant Professor, Physics
B.S. E. in Physics — Concord College
M.S.E. in Physics — University of Tennessee, Knoxville
Additional Graduate Study in Physics — University of Tennessee, Knoxville

BOB BALLARD  Instructor, Business Data Processing
B.S. in Mathematics — Tennessee Technological University

CHARLES L. BRYANT  Division Head, Engineering Technologies; Associate Professor, Mechanical Engineering Technology
B.S. in Aerospace Engineering — Air Force Institute of Technology
M.S. in Aerospace Engineering — Air Force Institute of Technology

KARLA DUKES BURDETTE  Assistant Professor, Mathematics
B.S. in Mathematics — East Carolina University
M.A.T. in Mathematics — Converse College

LINDA CALVERT  Instructor, Mathematics
B.S. in Mathematics — Mississippi University for Women
SHARON DAY
Instructor, Construction Engineering Technology
B.S. in Civil Engineering — University of Tennessee, Knoxville
BENNY DISNEY
Instructor, Construction Engineering Technology
A.E. in Civil Engineering Technology — Chattanooga State Technical and Community College
A.S. in Construction Engineering Technology — State Technical Institute at Knoxville
Certified Engineering Technician
JOHN DUNN
Assistant Professor, English
B.S. in English — University of Tennessee, Knoxville
M.A.C.T. in English — University of Tennessee, Knoxville
Additional Study in Reading — University of Tennessee, Knoxville
JUDY EDDY
Department Head, Communications; Assistant Professor, Communications
B.S. in Elementary Education — Baylor University
M.S. in Education — Baylor University
SANDRA K. EDMIN
Department Head, Business Data Processing; Assistant Professor, Business Data Processing
B.S. in Mathematics — University of Tennessee, Knoxville
M.S. in Computer Science — University of Tennessee, Knoxville
TOM FLETCHER
Assistant Professor, Mid-Management Technology
B.S. in Mechanical Engineering — Kansas State University
M.S. in Industrial Engineering — University of Tennessee, Knoxville
G. ALAN GICK
Department Head, Marketing; Assistant Professor, Marketing
B.S. in Business Administration — Indiana University, PA
M.S. in Marketing — University of Pittsburgh
Doctoral Coursework in Management — University of Pittsburgh and West Virginia University
SYDNEY GINGROW
Assistant Professor, Communications
B.A. in English — University of Tennessee, Knoxville
M.S. in English Education — University of Tennessee, Knoxville
DANNY GORMAN
Instructor, Industrial Electricity
Certificate in Industrial Electricity — International Correspondence School, Devry Institute of Technology
DAVID C. GRAHAM
Instructor, Alcoa Program
B.S. in Mechanical Engineering — University of Tennessee, Knoxville
RUTH HARPER
Instructor, Business Data Processing
B.A. in Spanish and English — University of Southern Mississippi
M.A. in Spanish and Social Work — Mississippi State University
Additional Graduate Study — M.I.T., Cambridge, Mass.
TOM HENLEY
Division Head, Business Technologies; Assistant Professor, Mid-Management Technology
B.S. in Chemistry — University of Tennessee, Knoxville
J.D. — University of Tennessee, Knoxville
GAY HENRY
Instructor, Developmental Studies
B.A. in English — Pfeiffer College
M.A. in English — University of Tennessee, Knoxville
DORIS J. IVIE  Associate Professor, Communications
B.A. in English — University of Tennessee, Knoxville
M.A. in English — University of Tennessee, Knoxville
Additional Graduate Study — University of Tennessee, Knoxville

DAVID JOB  Department Head, Engineering Graphics
Bachelor of Architecture — University of Tennessee, Knoxville

JANICE KENNEDY  Instructor, Developmental Studies
B.S. in Home Economics — University of Tennessee, Knoxville
M.S. in Reading — University of Tennessee, Knoxville

RANDAL KIDD  Department Head, Computer Accounting;
Assistant Professor, Computer Accounting
B.S. in Accounting — University of Tennessee, Knoxville

WYATT KILGALLIN  Instructor, Electrical Engineering Technology
A.A.S. in Electronics Technology — Morehead State University
B.S. in Physics and Mathematics — Morehead State University
Graduate Study in Mathematics and Engineering — University of Tennessee, Knoxville

RICHARD LAUGHERTY  Department Head, Emergency Medical Technology; Assistant Professor, Emergency Medical Technology
B.S. in Secondary Education — University of Tennessee, Knoxville
Certificate, Intensive Coronary Care — St. Mary's Medical Center
R.N. — St. Mary's School of Nursing

LOUISE M. LEWALD  Assistant Professor, Mathematics
B.S. in Mathematics — University of Minnesota
M.A. in Mathematics — University of Tennessee, Knoxville
Additional Graduate Study in Computer Science — University of Tennessee, Knoxville

FRED M. LEWIS  Instructor, Alcoa Program
A.S. in Mechanical Engineering Technology — State Technical Institute at Knoxville

MATTHEW LONG  Instructor, Alcoa Program
B.S. in Industrial Education — Hampton University, Hampton, Virginia

DWIGHT R. MAGNUSON  Associate Professor, Mechanical Engineering Technology
B.S. in Mechanical Engineering — University of Tennessee, Knoxville
M.E. in Nuclear Engineering — University of Virginia
Registered Professional Engineer

MALCOM McCARN  Assistant Professor, Computer Accounting
B.S. in Marketing — University of Tennessee, Knoxville
J.D. — John Marshall Law School

WILLIAM M. MILLER  Assistant Professor, Chemical Engineering Technology
B.S. in Chemical Engineering — Mississippi State University

ROBERT MOBLEY  Associate Professor, Electrical Engineering Technology
B.S. in Electronic Engineering — University of Florida
MEHDI PARVARANDEH  Instructor, Electrical Engineering Technology  B.S. in Mathematics and Physics — East Tennessee State University  B.S. in Electronics — University of Tennessee, Knoxville  M.S. in Communication Electronics — University of Tennessee, Knoxville

ROBERT R. SCOTT, III  Department Head, Chemical Engineering Technology; Associate Professor, Chemical Engineering Technology  B.S. in Chemical Engineering — University of Tennessee, Knoxville  M.S. in Chemical Engineering — University of Cincinnati  Registered Professional Engineer

THOMAS SCOTT  Lab Technician  Certificate in Industrial Electricity

THOMAS SMITH  Instructor, Alcoa Program Teaching diploma in Electrical Installation — Salisbury, Rhodea

BILL PHILLIPS  Instructor, Industrial Fire Safety

TERRY M. SISK  Instructor, Mechanical Engineering Technology  A.S. in Mechanical Engineering Technology — State Technical Institute at Knoxville  Additional Study — University of Tennessee, Knoxville

MICHAEL D. PRICE  Department Head, Construction Engineering Technology; Assistant Professor, Construction Engineering Technology  Bachelor of Architecture — University of Tennessee, Knoxville  Registered Licensed Architect, State of Tennessee

FREDERICK M. STEPHENS  Associate Professor, Mechanical Engineering Technology  B.S. in Industrial Education — University of Tennessee, Knoxville  M.S. in Safety Education — University of Tennessee, Knoxville

JESSE ROUSE  Instructor, Industrial Electricity  Self-employed electrical contractor

RICHARD TOWNSEND  Instructor, Mathematics  A.S. in Health and Physical Education — Jackson State Community College  B.S. in Health and Physical Education — University of Tennessee, Knoxville
QUENTIN WEBB  
Instructor, Alcoa Program  
M.S. in Distributive Education — University of Tennessee, Knoxville

RON WILES  
Assistant Professor, Business Data Processing  
B.S. in Mathematics — University of Tennessee, Knoxville  
M.A. in Mathematics — University of Tennessee, Knoxville

JACK H. WILSON  
Division Head, Related Studies; Professor, Communications  
B.A. in English — University of Tennessee, Knoxville  
M.A.T. in English as a Second Language — University of Illinois  
M. Div. in General Studies — Emory University  
Ph.D. in Humanities — Emory University  
Ed.D. in Curriculum and Instruction — University of Tennessee, Knoxville

FITZ R. WINSLOW  
Department Head, Mechanical Engineering Technology; Instructor, Mechanical Engineering Technology  
B.S. in Metallurgical Engineering — Carnegie-Mellon University  
M.S. in Metallurgical Engineering — Carnegie-Mellon U.  
Ph.D. in Metallurgical Engineering — Carnegie-Mellon U.

GARY L. WRIGHT  
Department Head, Mathematics and Physics; Assistant Professor, Mathematics  
B.S. in Mathematics — University of Tennessee, Knoxville  
M.S. in Mathematics — University of Tennessee, Knoxville  
Additional Graduate Study — University of Tennessee, Knoxville
Industrial specialization, 44, 46
Insurance certificate program, 108
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Jobs, typical, 28, 31, 34, 38, 42, 60, 72, 76

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