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</table>
# ACADEMIC CALENDAR FALL 1976 - SUMMER 1977

## Winter Quarter 1976
- **Orientation and Registration**: January 5
- **Classes begin**: January 7
- **Last day to register or add classes**: January 9
- **Last day to drop classes**: January 14
- **Last day to Withdraw**: March 10
- **Classes End**: March 16
- **Final Examinations**: March 17 - 19
- **Spring Break**: March 20 - 25

## Spring Quarter 1976
- **Orientation and Registration**: March 29
- **Classes begin**: March 31
- **Last day to register or add classes**: April 2
- **Last day to drop classes**: April 7
- **Good Friday**: April 16
- **Last day to Withdraw**: June 2
- **Classes End**: June 8
- **Final Examinations**: June 9 - 11
- **Commencement Exercises**: June 12

## Summer Quarter 1976
- **Orientation and Registration**: July 5
- **Classes begin**: July 7
- **Last day to register or add classes**: July 9
- **Last day to drop classes**: July 14
- **Labor Day**: September 6
- **Last day to Withdraw**: September 8
- **Classes End**: September 21
- **Final Examinations**: September 22 - 24

## Fall Quarter 1977
- **Orientation and Registration**: September 27
- **Classes begin**: September 29
- **Last day to register or add classes**: October 1
- **Last day to drop classes**: October 6
- **Thanksgiving Day**: November 25 & 26
- **Last day to Withdraw**: December 1
- **Classes End**: December 7
- **Final Examinations**: December 8 - 10
Winter Quarter 1977

Orientation and Registration  
Classes begin  
Last day to register or add classes  
Last day to drop classes  
Last day to Withdraw  
Classes end  
Final Examination  
Spring Break  
January 3  
January 6  
January 7  
January 12  
March 9  
March 15  
March 16 - 18  
March 21 - 25

Spring Quarter 1977

Orientation and Registration  
Classes begin  
Last day to register or add classes  
Last day to drop class  
Good Friday  
Last day to Withdraw  
Classes end  
Final Examinations  
Commencement Exercises  
March 28  
March 30  
April 1  
April 6  
April 8  
June 8  
June 14  
June 15 - 17  
June 18

Summer Quarter 1977

Orientation and Registration  
Classes begin  
Last day to register or add classes  
Last day to drop classes  
Last day to Withdraw  
Classes end  
Final Examinations  
July 5  
July 7  
July 11  
July 14  
September 14  
September 20  
September 21 - 23

Fall Quarter 1977

Orientation and Registration  
Classes begin  
Last day to register or add classes  
Last day to drop classes  
Thanksgiving Day  
Last day to Withdraw  
Classes end  
Final Examinations  
September 26  
September 28  
September 30  
October 5  
November 26 & 25  
December 7  
December 14  
November 14 - 16
PURPOSE OF THE INSTITUTE

The State Technical Institute at Knoxville is a state institution conducting two-year programs leading to an Associate Degree. Its purpose is to prepare people for employment in the fields of Chemical Engineering Technology, Electronic Engineering Technology, and Mechanical Engineering Technology. It is the philosophy of State Tech to present related studies, theory, and practical work in a manner that will prepare its graduates for gainful employment and good citizenship. Also, State Tech offers special programs and courses to meet the needs of industry, business and government. These special courses may prepare adults for employment, or upgrade and retrain employed adults. A certificate is awarded for completion of special courses.
RECOGNITION OF THE INSTITUTE

The State Technical Institute at Knoxville is approved by the Tennessee State Board for Vocational Education. This Board has granted the Institute the privilege to award the Associate Degree in Engineering and the Associate Degree in Science.

The State Technical Institute at Knoxville is approved under appropriate laws governing the Veterans Administration to offer training for veterans and other eligible persons.

The faculty of the Institute will work to obtain accreditation of the State Technical Institute at Knoxville by the Southern Association of Colleges and Schools at the earliest possible date.

The school is authorized under Federal Law to enroll nonimmigrant alien students. The Institute reserves the right to require an English proficiency examination before a nonimmigrant alien student is accepted for admission.
INSTITUTE IS A TENNESSEE STATE SCHOOL

The Institute operates under the State Board for Vocational Education of Tennessee and is administered through the Tennessee State Department of Education, Division of Vocational-Technical Education.

TECHNICIANS - A DEFINITION

Technicians are people who serve as assistants to professional people; for example, engineering technicians are the right-hand aids for engineers. The engineering technician works in the occupational area between the engineer and the craftsman. He must be able to understand and speak the language of both the engineer and the craftsman. Frequently, it is the responsibility of the engineering technician to convert the ideas of the engineer into a working model.
ADMISSION

Entrance Requirements:

A person applying for admission to the State Technical Institute at Knoxville must be a high school graduate or have an equivalency (GED) diploma.

It is recommended that individuals who have not previously earned satisfactory college-level credits submit scores from the American College Testing (ACT) examination. Each Student must visit the campus for interviews and pre-testing.

Each student must also be of good moral character, meet the standards of physical ability required by the occupational field which he plans to enter and the Institute reserves the right to reject any applicant whose general records and attitude do not predict success in the Institute's environment. The Institute will provide opportunities for education to all qualified applicants without regard to race, sex, creed, or status in life.

Freshman Applications:

Freshman applicants must submit to the Institute a completed application and medical form. Forms are available in the Student Services Office. Visit the school for personal interviews and testing and submit a transcript of high school and college work if any. (Submit a copy of GED scores if nongraduate of high school.)
Freshman Registration and Orientation

A freshman calendar will be given to all prospective students completing application procedures. Freshman are required to register on the dates shown on the calendar and are required to attend an orientation period the week of registration.

Transfer Students:

Applicants for transfer from another college or university must present a valid transcript from each school attended.

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; if they can be related to the student's field of study, credit will be given for work taken at accredited institutions. No credit will be given unless a grade of C or above was received.

Armed forces education experience will be evaluated per guidelines of the American Council on Education. The Institute will require verification from official military records that the course was completed and where.

Special Students:

A special student is one who is not a candidate for a degree. Credit is granted but may not be used for degree purposes unless and until regular admission is granted.
**Readmission:**

Any student who misses more than one quarter must submit a written request for readmission to the Director. The request will be acted upon by the Academic Standards Committee as outlined in the student handbook.

**EXPENSES**

**Quarterly Fees:**

Full-time students (registered for twelve hours or more) are charged $55 maintenance fee per quarter. Part-time students (registered for fewer than twelve hours) will pay $5 per quarter hour maintenance fee.

All fees must be paid at registration. Therefore, financial arrangements must be made prior to registration. Students receiving any form of financial aid must have authorization on file in the Business Office before registration.
Refund Policy:

State Tech will refund to any student who officially withdraws or is dismissed for a course, any unused portion of the maintenance fee paid. In order to obtain a refund, the student must present a written notice of withdrawal to the Admissions Office. The amount of refund is computed as follows:

If withdrawal occurs within 1 to 15 calendar days from the official registration date, the refund is 75%.

If withdrawal occurs within 16 to 30 calendar days from the official registration date, the refund is 30%.

If withdrawal occurs 31 or more calendar days after official registration, the refund is 0%.

Refunds are made by the Business Office after the withdrawal date. Any amount due to the Institute from the student must be satisfied before a refund is made to the student.

Graduation Fees:

Each candidate for an Associate Degree must pay a diploma fee of $5. He is also required to pay the actual cost of rental of the cap and gown if he participates in the graduation ceremony. Graduation fees are not refundable.

Late Fees:

A charge of $5 late fee will be made for any registration occurring after the official registration date given in the Institute calendar.
WITHDRAWAL PROCEDURES

A student planning to quit school must officially withdraw through the Registrar's Office. No credit will be given for courses not completed. Withdrawal will not be accepted during the last two weeks of a regular session unless the student is physically unable to attend a grade of Incomplete (I) will be assigned. A student who otherwise quits a course during the last two weeks of a quarter will be assigned a grade of "F".
ACADEMIC STANDARDS

Grading Policy:

Grades will be earned on a four point system as follows:

<table>
<thead>
<tr>
<th>GRADE</th>
<th>NUMERICAL AVERAGE</th>
<th>QUALITY PTS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>91 - 100</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>81 - 90</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>71 - 80</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>65 - 70</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>64 Below</td>
<td>0</td>
</tr>
<tr>
<td>*WP</td>
<td>WITHDRAWAL WHILE PASSING</td>
<td>0</td>
</tr>
<tr>
<td>*WF</td>
<td>WITHDRAWAL WHILE FAILING</td>
<td>0</td>
</tr>
<tr>
<td>*AUDIT</td>
<td>NO CREDIT</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>INCOMPLETE</td>
<td>0</td>
</tr>
<tr>
<td>X</td>
<td>CONTINUATION</td>
<td>0</td>
</tr>
</tbody>
</table>

The final day to add a course will be one week after the first class meets.

The final day to drop a course will be two weeks after the first class meets.

Incomplete grades must be removed the next time the course is offered.

The only school wide grading policy is that no final exam will count more than 50% of a student's final grade.
All tests, quizzes, lab reports and other graded exercises will be returned to the student as soon as possible and it will be his responsibility to keep a tabulation and monitor his own progress. Anytime a student feels that he needs help in any area he should feel free to approach his instructor. Instructors are available for individual help and if necessary special group sessions can be arranged. Each instructor will have office hours posted on his office door.

Repetition of Courses:

Students are responsible for repeating courses failed. The most recent grade will be recorded on the official transcripts. Courses may be repeated as often as the student feels necessary.

Records of Course Work:

The Student Services Office will maintain official records of student course work. Grades will be recorded on the official records at the end of each quarter and the Grade Point Average will be computed and posted on the official transcript. Students wishing to review their transcripts may do so by inquiring in the Student Services Office. Transcripts will not be taken from the office. (an official copy of a transcript may be obtained by the student for a charge of one dollar).
PROBATION & SUSPENSION

Academic Probation and Suspension:

A student whose overall grade point average (GPA) drops below 2.0 will be placed on academic probation. To be removed from probation the student must obtain a GPA of at least 2.0 the next quarter. Failure to attain status for removal from probation will result in Academic Suspension for one quarter. Readmission after suspension is not automatic. A suspended student must present a written request to the President for approval of readmission. The second academic suspension of a student will be permanent.

All requests for readmission from Academic Suspension submitted to the President will be reviewed and acted upon by the Academic Standards Committee. This Committee will consist of the President, as chairman, the student's department head, two instructors who have taught the student, the Head of Student Services, and a Student Government Representative.

Disciplinary Probation & Suspension:

Any misconduct of a student or group of students may result in that individual or group being brought before the Discipline Committee. That committee will consist of the President as chairman, the student's department head, the Student Council President, and the Head of Student Services, and they will determine if a warning, probation or suspension is necessary.
Request for readmission will be submitted in writing to the President, showing reason for readmission. Request submitted will be reviewed and acted upon by the Discipline Committee. Written notification will be sent to the student stating the action of the committee.

Exceptions to this procedure are outlined in numbers 5 & 6 under Student Conduct.

Failure to abide by Safety Regulations of State Tech will be considered a disciplinary suspendable action.

Student Classification & Course Load:

Students carrying fewer than twelve quarter hours are considered part-time students.

Part-time students are required to fulfill all degree requirements and are subject to the same transfer of credit procedures as are full-time students.

A student desiring to carry more than eighteen quarter hours must have the approval of his advisor and department head.

A student must have successfully completed forty-five credit hours to be considered a sophomore. Transfer credit plus State Tech work must equal forty-five hours.

STUDENT SERVICES

The Student Services Department coordinates the following services for students: testing and counseling, recruitment, student financial aid, job placement and follow-up, and student activities. The department is staffed with full-time professional employees who are avail-
able to work with students in their areas of interest. The activities of the department are coordinated by the Head of Student Services.

Testing and Counseling:

Testing and counseling services are provided to assure that the student receives maximum results from his educational opportunities. The counselors are available for academic and personal counseling.

Student 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:

- **Basic Educational Opportunity Grant** - This federal grant is to be used as a base for other grant programs. Applications can be obtained from your high school counselors, financial aid counselors, or from Basic Grants, P.O. Box 6, Iowa City, Iowa 52240.

- **Guaranteed Student Loan** - This is a low interest loan plan that the student obtains through a bank or other lending agency of financial aid counselor. While the student is in school, or at least a part-time student, there is no accumulating interest. Applications may be obtained through the lender and must be accompanied by a letter from the financial aid counselor.

- **State Tech Work Scholarship** - State Tech Work Scholarship is 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. Applications are available from the financial aid counselor.

Optimist Club Scholarship - There are a limited number of scholarships available which cover tuition only. Applications are available from the financial aid counselor.

Assistance - Assistance is available under Social Security, Veterans Administration, and Vocational Rehabilitation. Students should contact the proper office to apply.

Beginning 1976-77 school year, students may participate in College Work-Study (CWS) and Supplemental Educational Opportunity Grant (SEOG). Contact the financial aid counselor during the winter term 1976-76 for further information.

Students interested in financial aid should follow the procedures below:

1. File application for admission to State Tech.
2. File application for financial aid with financial aid counselor.
3. Complete and file the Family Financial Statement with the American College Testing Program (ACT), Needs Analysis System. ACT Family Financial Statements are available from financial aid counselors.

Contact the financial aid counselor for further information.
STUDENT CONDUCT

We feel that State Tech is a special institution and therefore its students are special people. The administration is proud of the modern facilities and hopes the students will take complete advantage of State Tech opportunities. We also hope that students will take pride in the campus and treat the facilities with the same respect as they do their own homes. There are a few major areas of concern and they are as follows:

1. Any student who misses three classroom periods of instruction per quarter is subject to having his letter grade dropped one letter, at the discretion of his instructor. In addition, any student who misses the equivalent of one full week’s instruction in any course may be suspended from that course the remainder of the quarter, at the discretion of his instructor.
2. Each student is expected to comply with the professional standards of behavior and appearance applicable to the field for which he or she is training.

3. During free periods students must be cautious not to interfere with ongoing classes or labs.

4. Visitors to the campus may be prospective employers and should be treated with courtesy.

5. The use of alcohol is not permitted on campus and will result in nonappealable suspension.

6. The use or possession of drugs or firearms will be turned over to civil authorities and the student given nonappealable suspension.

7. Safety glasses are to be worn in the laboratories at all times. Other safety regulations will be necessary in labs and will be discussed by individual lab instructors.

8. There will be no smoking in the classrooms or labs. A ten-minute break will be provided each hour for rest and a smoke.

9. All students are requested to use the pay phone in the hall leading to the lab area for outgoing calls. Incoming messages will be taken in case of emergency calls only.

The rules are few and simple. We feel that no serious student should have trouble adhering to these regulations. They apply to the staff and faculty as well.
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<td>January 3</td>
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<tr>
<td>Classes begin</td>
<td>January 6</td>
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<tr>
<td>Last day to register or add classes</td>
<td>January 7</td>
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<tr>
<td>Last day to drop classes</td>
<td>January 12</td>
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<tr>
<td>Last day to withdraw</td>
<td>March 9</td>
</tr>
<tr>
<td>Classes end</td>
<td>March 15</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>March 16 - 18</td>
</tr>
<tr>
<td>Spring Break</td>
<td>March 21 - 25</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Spring Quarter 1977</th>
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</thead>
<tbody>
<tr>
<td>Orientation and Registration</td>
<td>March 28</td>
</tr>
<tr>
<td>Classes begin</td>
<td>March 30</td>
</tr>
<tr>
<td>Last day to register or add classes</td>
<td>April 1</td>
</tr>
<tr>
<td>Last day to drop class</td>
<td>April 6</td>
</tr>
<tr>
<td>Good Friday</td>
<td>April 8</td>
</tr>
<tr>
<td>Last day to withdraw</td>
<td>June 8</td>
</tr>
<tr>
<td>Classes end</td>
<td>June 14</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>June 15 - 17</td>
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<tr>
<td>Commencement Exercises</td>
<td>June 18</td>
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<table>
<thead>
<tr>
<th>Summer Quarter 1977</th>
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<tbody>
<tr>
<td>Orientation and Registration</td>
<td>July 5</td>
</tr>
<tr>
<td>Classes begin</td>
<td>July 7</td>
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<tr>
<td>Last day to register or add classes</td>
<td>July 11</td>
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<tr>
<td>Last day to drop classes</td>
<td>July 14</td>
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<tr>
<td>Last day to withdraw</td>
<td>September 14</td>
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<tr>
<td>Classes end</td>
<td>September 20</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>September 21 - 23</td>
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</table>

<table>
<thead>
<tr>
<th>Fall Quarter 1977</th>
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<tbody>
<tr>
<td>Orientation and Registration</td>
<td>September 26</td>
</tr>
<tr>
<td>Classes begin</td>
<td>September 28</td>
</tr>
<tr>
<td>Last day to register or add classes</td>
<td>September 30</td>
</tr>
<tr>
<td>Last day to drop classes</td>
<td>October 5</td>
</tr>
<tr>
<td>Thanksgiving Day</td>
<td>November 24 &amp; 25</td>
</tr>
<tr>
<td>Last day to withdraw</td>
<td>December 7</td>
</tr>
<tr>
<td>Classes end</td>
<td>December 13</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>December 14 - 16</td>
</tr>
</tbody>
</table>
CHEMICAL ENGINEERING TECHNOLOGY

Chemical engineering has been defined as "... the application of the principles of the physical sciences, together with the principles of economics and human relations, to fields that pertain directly to processes and process equipment in which matter is treated to effect a change in state, energy content, or composition."

The definition is intentionally broad and indefinite as to the extend of the field. It should be noted, however, that considerable emphasis is placed on the process and processing equipment. The work of many chemical engineers might better be called process engineering. The process may be any collection of steps involving changes in chemical composition or involving certain physical changes in materials being prepared, processed, separated, or purified. The work of many chemical engineers involves choosing the appropriate steps in the appropriate order to formulate a process for accomplishing a chemical manufacturing operation. Since each of the steps constituting a process is subject to variation, the process engineer must also specify the exact conditions under which each step is to be carried out.

The chemical engineering technician is a technical assistance to the chemical engineer and, as such, must be able to speak the language of the engineer.

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

**TYPICAL POSITIONS OPEN TO ENGINEERING TECHNICIANS**

Chemical engineering technician—works with chemical engineers, consulting firms, and individual plants during design of new chemical process equipment and improvement of existing systems.

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

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

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

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

Development technician—assists engineers and chemists in developing new processes, improving existing processes and carrying bench projects into pilot and/or full scale operation.
Pilot plant operator—operates equipment in research and development of new processes and products.

Production supervisor— instructs and directs others involved in chemical manufacturing.

Research assistant— assists research chemical engineers in operation of experimental equipment, data reduction, graphic and mathematical calculations and library research.
# CHEMICAL ENGINEERING TECHNOLOGY

<table>
<thead>
<tr>
<th></th>
<th>Class</th>
<th>Lab</th>
<th>Credit Hrs.</th>
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<tr>
<td><strong>First Quarter</strong></td>
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<td></td>
</tr>
<tr>
<td>EN 201</td>
<td>3</td>
<td>0</td>
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</tr>
<tr>
<td>MA 201</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>PH 201</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>CH 211</td>
<td>3</td>
<td>3</td>
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</tr>
<tr>
<td>CHE 201</td>
<td>1</td>
<td>0</td>
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</tr>
<tr>
<td></td>
<td>15</td>
<td>6</td>
<td>27</td>
</tr>
</tbody>
</table>

|         |       |     |             |
| **Second Quarter** |       |     |             |
| EN 202  | 3     | 0   | 3           |
| MA 202  | 5     | 0   | 5           |
| CH 212  | 3     | 3   | 4           |
| CHE 231 | 3     | 3   | 4           |
|         | 10    | 6   | 16          |

|         |       |     |             |
| **Third Quarter** |       |     |             |
| EN 203  | 3     | 0   | 3           |
| MA 203  | 3     | 0   | 3           |
| DR 201  | 0     | 6   | 2           |
| CH 221  | 3     | 3   | 4           |
| CHE 232 | 3     | 3   | 4           |
|         | 12    | 12  | 16          |
## CHEMICAL ENGINEERING TECHNOLOGY

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours Per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fourth Quarter</strong></td>
<td></td>
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</tr>
<tr>
<td>MA 204</td>
<td>Statistics</td>
<td>3 Class, 0 Lab, 3 Credit Hrs.</td>
</tr>
<tr>
<td>SC 201</td>
<td>Human Relations</td>
<td>3 Class, 0 Lab, 3 Credit Hrs.</td>
</tr>
<tr>
<td>CH 311</td>
<td>Analytical Chemistry</td>
<td>2 Class, 6 Lab, 4 Credit Hrs.</td>
</tr>
<tr>
<td>CHE 341</td>
<td>Chemical Engineering Principles</td>
<td>3 Class, 0 Lab, 3 Credit Hrs.</td>
</tr>
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<td></td>
<td>Major Elective+</td>
<td>3 Class, 3 Lab, 4 Credit Hrs.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>14 Class, 9 Lab, 17 Credit Hrs.</td>
</tr>
</tbody>
</table>

| **Fifth Quarter** |                                      |                |
| PH 202         | Physics of Electricity               | 3 Class, 3 Lab, 4 Credit Hrs. |
|                | and Magnetism                        |                |
| ET 204         | Electronic Familiarization           | 0 Class, 3 Lab, 1 Credit Hrs. |
| CHE 321        | Chemical Engineering Materials       | 3 Class, 3 Lab, 4 Credit Hrs. |
| CHE 342        | Chemical Engineering Principles      | 3 Class, 0 Lab, 3 Credit Hrs. |
| CHE 301        | Industrial Seminar                   | 0 Class, 3 Lab, 1 Credit Hrs. |
|                | Major Elective +                     | 3 Class, 3 Lab, 4 Credit Hrs. |
| **Total**      |                                     | 12 Class, 13 Lab, 17 Credit Hrs. |

| **Sixth Quarter** |                                      |                |
| CHE 331         | Process Instrumentation and Controls | 3 Class, 0 Lab, 3 Credit Hrs. |
| CHE 343         | Chemical Engineering Principles      | 3 Class, 0 Lab, 3 Credit Hrs. |
| CHE 344         | Unit Operations Laboratory           | 0 Class, 6 Lab, 2 Credit Hrs. |
| CHE 311         | Industrial Safety                    | 3 Class, 0 Lab, 3 Credit Hrs. |
|                | Major Elective +                     | 3 Class, 3 Lab, 4 Credit Hrs. |
|                | Elective                             | 3 Class, 0 Lab, 3 Credit Hrs. |
| **Total**       |                                     | 15 Class, 9 Lab, 18 Credit Hrs. |
### CHEMICAL ENGINEERING TECHNOLOGY ASSOCIATE

#### DEGREE COURSE REQUIREMENTS

<table>
<thead>
<tr>
<th>ENGLISH</th>
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**Elective**

3
CHEMICAL ENGINEERING TECHNOLOGY

* The major elective will consist of three-quarter study taken from one of the following areas:

POLYMER TECHNOLOGY

CH 322 Polymer Chemistry
CHE 351-2 Polymer Processing Principles

ENVIRONMENTAL TECHNOLOGY

CH 322 Environmental Chemistry
CHE 361-2 Environmental Control Principles
CH 201 General Chemistry
4 Credits
3 Class Hours, 3 Laboratory Hours

A course of basic chemical concepts for non-chemical engineering technology students. Subjects covered include the atomic and molecular structure of matter; properties of solids, gases, and liquids; chemical reactions and combinations of elements. Emphasis will be placed on the metallic elements and their behavior in electro-chemical reactions.

Prerequisite: MA 202

CH 211, 212 Inorganic Chemistry
4 Credits each
3 Class Hours, 3 Laboratory Hours

A study of the fundamental principles and concepts of chemistry. Topics include atomic and molecular structure; chemical bonding; periodic classification of the elements; liquids, gases, and solids; solutions; chemical equilibrium; chemical reaction rates; acids, bases, and salts. Laboratory work will include the development of basic laboratory techniques; preparation of chemical compounds; studies of the physical and chemical properties of matter; detection and identification of the more important anions and cations.

Corequisites: MA 201, 202

CH 211 Organic Chemistry
4 Credits
3 Class Hours, 3 Laboratory Hours

A study of the physical and chemical properties of the compounds of carbon. Topics will include nomenclature, molecular structures, and the mechanisms of organic reactions. Laboratory work will include the synthesis, purification, and testing of organic compounds.

Prerequisite: CH 212

CH 311 Analytical Chemistry
4 Credits
2 Class Hours, 6 Laboratory Hours

A course of study concerned with the fundamental principles of the chemical and physical methods used in the chemical analysis of materials. The laboratory work will be concerning with familiarization with a wide variety of analytical techniques and equipment used in industry.

Prerequisite: CH 212
CHE 321 Chemical Engineering Materials 4 Credits
3 Class Hours, 3 Laboratory Hours

A study of the mechanical, physical, and chemical properties of engineering materials. The mechanisms and control of reactions between engineering materials and their environment will be discussed. Emphasis will be placed on the determination of suitable materials for use in various chemical processing applications.

Prerequisite: None

CHE 331 Process Instrumentation & Control 3 Credits
3 Class Hours

A study of the fundamentals and techniques of process control. Topics will include the elements of practical control theory; measurement of the basic industrial parameters of flow rate, temperature, liquid level and pressure; and industrial instrumentation. Emphasis will be placed on the proper selection, placement, and setting of control equipment.

Prerequisite: CHE 342
Corequisite: CHE 343, 344

CHE 341, 342, 343 Chemical Engineering Principles 3 Credits each
3 Class Hours each

A study of the fundamentals of the basic operations of chemical engineering. Topics will include fluid flow, heat transfer, mass transfer, and reaction kinetics. Emphasis will be placed on the study of pumps, valves, piping systems, heat exchangers, distillation columns, evaporators, dryers, and other chemical processing equipment of practical interest.

Prerequisite: MA 203, CHE 232
Corequisite: CHE 344 for CHE 343

CHE 344 Unit Operations Laboratory 2 Credits
6 Laboratory Hours

Laboratory experimentation in the basic operations of chemical engineering. Experiments will include flow systems, heat transfer systems, distillation, reactor systems, and control. Emphasis will be placed on group work and on the preparation of detailed laboratory reports.

Prerequisite: CHE 342
Corequisite: CHE 343
CH 322 Polymer Chemistry  
3 Class Hours, 3 Laboratory Hours  
4 Credits

A survey of the chemical and physical properties of long-chain molecules. Topics will include polymerization; polymer characterization; glass and melting transitions; polymer structure and related properties.

Prerequisite: CH 211

CH 332 Environmental Chemistry  
3 Class Hours, 3 Laboratory Hours  
4 Credits

A study of the chemistry of air and water pollution. Topics will include nomenclature; units of measurement and concentration; sampling techniques, particulate and gas analysis; determination and analysis of water pollutants.

Prerequisite: CH 221

CHE 201 Industrial Seminar  
1 Credit  
1 Class Hour

A study of the organization of typical local industries and the work of the chemical engineering technician in local industries. Emphasis will be placed on group discussions with outside speakers from local industries and regulatory agencies.

Prerequisites: None

CHE 301 Industrial Inspection Trips  
3 Laboratory Hours  
1 Credit

A study of the technology of industrial facilities. Trips will be made to a variety of industries representative of the major local industries.

Prerequisites: None

CHE 231, 232 Chemical Engineering Calculations  
3 Class Hours, 3 Laboratory Hours each  
4 Credits each

An introduction to the basic principles of chemical engineering analysis. Topics will include engineering units; systems of measurements; slide rule computation; data representation and analysis; fluid statics and material and energy balances.

Prerequisite: MA 202 for CHE 232
CHE 311 Industrial Safety

A survey of the development of safety standards and their application to the chemical processing industries. The requirements of the Occupational Health and Safety Act will be presented. Emphasis will be placed on the best modern industrial standards and methods for a good safety program.

Prerequisite: None

CHE 351, 352 Polymer Processing Principles

2 Class Hours, 3 Laboratory Hours each

The properties of polymer melts; viscometry; and unit operations of polymer processing; extrusion, calendering, milling, molding, mixing, fiber spinning, drawing and texturizing. Emphasis will be placed on polymer processing equipment and techniques.

Prerequisite: CH 322 or consent of the instructor.

CHE 361, 362 Environmental Control Principles

2 Class Hours, 3 Laboratory Hours each

An introduction to the problem of air, water, and noise pollution. Emphasis will be placed on a study of environmental control equipment and techniques.

Prerequisite: CH 332 or consent of the instructor.

(Note 1)

CHE 371, 372, 373 Research Problem

Investigation and report of a chemical engineering problem of interest to both student and adviser. Based on problem difficulty; three, six, or nine hours credit will be awarded. No credit will be given until the report is completed and approved.

Prerequisite: Degree standing and consent of the instructor

Note 1: Topics presented on a demand basis.
ELECTRONIC ENGINEERING TECHNOLOGY

While the electronic technician may be engaged in any one of a vast number of industrial applications of electronics, he must possess a basic knowledge of electricity and instrumentation. The two major areas offered at the school are the study of electro-mechanical devices and the study of communications. In the first area the student will learn how electronic devices are used to sense changes in a mechanical or chemical process and how they are used to regulate or control the process. In the second area, telecommunications, microwave transmission, and other related subjects will be learned. The graduate technician can apply his skills to virtually any process and may perform simple design tasks under the supervision of the engineer. The basic tools of his trade are a grasp of the theory of electricity and basic circuits. He will understand the use of tubes and transistors as they apply to electronic devices. He may be employed by any industry using these devices, but would likely find a ready job market in the following areas:

1. Research and Development
2. Industrial Process Control
3. Numerical Control Systems
4. Space Research
5. National defense
6. Electronic Data Processing
7. Communications
Typical Positions open to graduates

Electronic technician—applies electronic circuits theory to layout, build, test, repair, and modify developmental and production electronic equipment such as computers, missile-control instrumentation, and machine-tool numerical controls.

Electronic mechanic—repairs electronic equipment such as computers, industrial controls, radar systems, telemetering and missile-control systems, following blueprints, and manufacturers' specifications.

Component inspection technician—inspects and repairs electronic computer components and subassemblies, following schematic diagrams, and specifications using handtools and electronic testing instruments.

Electronic assembler—assembles electronic equipment using electronic test equipment and following blueprints, wiring diagrams, and manufacturing standards.

Systems quality control inspector—inspects electronic systems such as radar navigation, telemetering equipment, and computer memory units, following specifications and using precision measuring instruments.

Electrical control assembler—assembles protective, communication and control devices, such as switches, relays, rheostats, transmitters, and switchboards, as laid out in drawings and wiring diagrams.

Systems testing laboratory technician—devises and modifies electronic instrumentation and apparatus used to test and evaluate electrical, electronic, electro-mechanical, and electrohydraulic systems equipment.
Electronic systems tester—tests complete electronic systems, such as radio or television transmitters and computer memory units using electronic testing equipment and following work orders, test manuals, and schematic and wiring diagrams.

Communication equipment salesman—sells communications equipment, utilizing knowledge of electronics.

**ELECTRONIC ENGINEERING TECHNOLOGY ASSOCIATE**

**DEGREE REQUIREMENTS**

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<td>Introduction to Rotating Machines</td>
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<td>ET 305</td>
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<td>ET 306</td>
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<td>Industrial Safety</td>
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**TOTAL HOURS REQUIRED**

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# ELECTRONIC ENGINEERING TECHNOLOGY

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| Fifth Quarter | |
|----------------|-------|-----|-------------|
| ET 302 Active Devices III | 3     | 3   | 4           |
| ET 307 Pulse and Digital Circuits II | 3     | 3   | 4           |
| ET 304 Introduction to Rotating Machines | 3     | 3   | 4           |
| ET 308 Special Project | 0     | 6   | 3           |
| Departmental Subject: Technical Elective | 0     | 0   | 3           |
| **Total** | **9** | **15** | **18** |

| Sixth Quarter | |
|----------------|-------|-----|-------------|
| ET 305 Transducers | 3     | 3   | 4           |
| ET 306 Electro-Mechanical System | 3     | 3   | 4           |
| Departmental Subject: Technical Elective | 3     | 0   | 3           |
| SC 202 Economics | 3     | 0   | 3           |
| Other Technical Elective | 3     | 3   | 4           |
| **Total** | **15** | **9** | **18** |
ET 201 DC Circuits
3 Class Hours, 3 Laboratory Hours
Atomic structure, electrical units, charge, series, and parallel circuits, Ohm's Law, Kirchoff's Law, Thevenin, Norton and Superposition Theorems.
Corequisite: MA 201

ET 202 AC Circuits
4 Credits
3 Class Hours, 3 Laboratory Hours
Magnetism, magnetic units, electromagnetic induction, alternating voltage and current, inductance, capacitance, reactance, AC Circuits, resonance, filters, electron tubes, and semiconductors.
Prerequisite: ET 201
Corequisite: MA 202

ET 203 Active Devices I
4 Credits
3 Class Hours, 3 Laboratory Hours
An introductory course in solid state devices and the basic circuits in which they are used. Included are studies in semiconductor physics, the junction diode, large-signal diode approximation, small signal diode approximation, common-base approximation, common emitter approximation, and common collector approximation.
Prerequisite: ET 202

ET 204 Electronic Familiarization
1 Credit
3 Laboratory Hours
Soldering, use of hand tools, basic electronic assembly and construction or prototypes. Use of basic electrical instruments.
Corequisite: ET 201

ET 301 Active Devices II
4 Credits
3 Class Hours, 3 Laboratory Hours
An expanded study of solid state circuits and their design including: large signal operation, biasing method, A-C operation, cascading of stages, temperature effects, frequency response and h-parameters.
Prerequisite: ET 203
ET 302 Active Devices III
3 Class Hours, 3 Laboratory Hours
4 Credits

A study of special purpose devices i.e. Field effect transistors, Silicon controlled rectifiers, Unijunction transistors, Varistors, thermistors and varactors, light emitting diodes, and integrated circuits.

Prerequisite: ET 301

ET 303 Pulse and Digital Circuits
3 Class Hours, 3 Laboratory Hours
4 Credits

OR, AND, NOR, NAND, AND exclusive OR gates, flip-flops, binary numbers, storage, A/D converters, and memory cores.

Prerequisite: MA 301

ET 304 Introduction to Rotating Machines
3 Class Hours, 3 Laboratory Hours
4 Credits

AC and DC motors and generators, servo mechanisms, and synchro components and systems.

Prerequisite: ET 304

ET 305 Transducers
3 Class Hours, 3 Laboratory Hours
4 Credits

A study of transducers for pressure, temperature, level and flow. Strain gauges and their applications.

Prerequisite: ET 304

ET 306 Electro-Mechanical System
3 Class Hours, 3 Laboratory Hours
4 Credits

This course utilizes concepts from electronic/industrial digital solid-state, and transducers courses to deal with unified systems typical of industrial automation.

Prerequisites: ET 303, 304
ET 308 Special Projects
2 Credits each
6 Laboratory Hours

A projects course in which the student and instructor will identify a research problem to be pursued by the student.

Prerequisite: ET 302
and approval of head of department

(Note 1)

ET 310 Introduction to Communication
4 Credits
3 Class Hours, 3 Laboratory Hours

A survey course in communications circuits and devices.

Prerequisite: ET 302

(Note 1)

ET 311 Communication Systems
4 Credits
3 Class Hours, 3 Laboratory Hours

An expanded treatment of circuits and systems typical of the communications industry, receivers, transmitters and antennas.

Prerequisite: ET 310

ET 303 Pulse and Digital Circuits
4 Credits
3 Class Hours, 3 Laboratory Hours

Analysis of wave-shaping, slapping and clamping circuits, Astable, Monostable and bistable multivibrators. The laboratory experiments emphasize the investigation and design of basic circuits.

ET 307 Pulse and Digital Circuits II

Analysis of basic digital logic circuits which include gating, registers, accumulator, counters, D/A and A/D conversion, and clock and control systems. The laboratory experiments emphasize the design and analysis of logic circuits.
ELECTRONIC ENGINEERING TECHNOLOGY

Electives:

ME 222  Industrial Safety
ET 310 & ET 311  Introduction to Communications & Communication Systems
DP 222  Computer Programming
MECHANICAL ENGINEERING TECHNOLOGY

The Mechanical Engineering Technology Department offers a program leading to an associate of Science Degree in Mechanical Engineering Technology.

Since the field of mechanical engineering encompasses many areas of specialization, the curriculum includes courses from many of these areas to provide the student with a general background in mechanical engineering which will prepare him to be a productive technician in his initial entry into industry. In his course of study, the student will receive instruction in the areas of mathematics, communication, physical science, engineering drawing, materials science, mechanics, thermal science, electronics, industrial safety, and other areas applicable to the field of mechanical engineering technology. Specification is available through elective courses offered during the second year of the Mechanical Engineering Technology curriculum.

Graduates of the Mechanical Engineering Technology program may work in research and development, design, manufacturing, maintenance, management, or technical sales.

FUNCTIONS OF MECHANICAL ENGINEERING TECHNICIANS

I. Major Functions:

1. Assist Area Engineers, Design Engineering and Maintenance personnel in trouble shooting and diagnosing problems with process equipment and/or systems.

2. Perform tests, collect data, evaluate and make recommendations for equipment modification, changes or replacements to eliminate technical problems, to reduce maintenance cost and/or improve equipment reliability.
3. Provide technical assistance in the training of both maintenance supervisors and craftsmen.

II Additional Functions:

1. As assigned, will make necessary tests and checks, using necessary technical test equipment to determine reasons for equipment malfunctions and/or failure.

2. As requested, will assist maintenance supervisors and craftsmen in trouble shooting and diagnosing problems of highly technical nature.

3. Builds and/or assists craftsmen with building prototypes equipment for test and evaluations.

4. Reviews available data, performs necessary test and/or collects additional field data that can be evaluated for making recommendations for modifications, changes, design and/or equipment replacement to solve process problems.

5. Provide technical assistance in the training of craftsmen.


MECHANICAL ENGINEERING TECHNOLOGY

ASSOCIATE DEGREE COURSE REQUIREMENTS

<table>
<thead>
<tr>
<th>ENGLISH &amp; SOCIAL SCIENCE</th>
<th>CREDIT HRS.</th>
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<tbody>
<tr>
<td>EN 201 Introduction to Communication Process</td>
<td>3</td>
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<tr>
<td>EN 202 Dynamics of Written Expression</td>
<td>3</td>
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<tr>
<td>EN 203 Technical Report Preparation &amp; Presentation</td>
<td>3</td>
</tr>
<tr>
<td>SC 201 Human Relations</td>
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<tr>
<td>SC 202 Economics</td>
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<tr>
<th>MATH</th>
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<tr>
<td>MA 201 Algebra &amp; Trigonometry</td>
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<tr>
<td>MA 202 Algebra &amp; Trigonometry</td>
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<td>MA 203 Applied Calculus</td>
<td>3</td>
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## PHYSICS

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<tr>
<th>Course</th>
<th>Description</th>
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<tr>
<td>PH 201</td>
<td>Physics of Mechanics</td>
<td>4</td>
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<tr>
<td>PH 202</td>
<td>Physics of Electricity &amp; Magnetism</td>
<td>4</td>
</tr>
<tr>
<td>PH 203</td>
<td>Physics of Heat, Light &amp; Sound</td>
<td>4</td>
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## DRAFTING

<table>
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<tr>
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<tbody>
<tr>
<td>DR 201</td>
<td>Technical Drawing</td>
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<td><strong>Total</strong></td>
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## CHEMICAL ENGINEERING TECHNOLOGY

<table>
<thead>
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<th>Course</th>
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<tbody>
<tr>
<td>CH 201</td>
<td>Basic Chemistry</td>
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## ELECTRONIC ENGINEERING TECHNOLOGY

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>ET 211</td>
<td>DC and AC Circuits</td>
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<tr>
<td>ET 304</td>
<td>Introduction to Rotating Machinery</td>
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## MECHANICAL ENGINEERING TECHNOLOGY

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
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<tr>
<td>ME 221</td>
<td>Engineering Materials and Manufacturing Process</td>
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<tr>
<td>ME 222</td>
<td>Industrial Safety</td>
<td>3</td>
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<td>ME 223</td>
<td>Shop Practices</td>
<td>3</td>
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<tr>
<td>ME 251</td>
<td>Statics</td>
<td>5</td>
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<tr>
<td>ME 252</td>
<td>Dynamics</td>
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<tr>
<td>ME 301</td>
<td>Machine Elements I</td>
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<tr>
<td>ME 302</td>
<td>Machine Elements II</td>
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<tr>
<td>ME 311</td>
<td>Fluid Mechanics</td>
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<td>ME 313</td>
<td>Heat Transfer &amp; Thermodynamics</td>
<td>4</td>
</tr>
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<td>ME 332</td>
<td>Automatic Controls</td>
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<tr>
<td>ME 351</td>
<td>Mechanics of Materials</td>
<td>4</td>
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<td><strong>Total</strong></td>
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</table>

## ELECTIVES

No less than 3 hours selected from the Chemical, Electronic, Mechanical, Physics of Math courses offered.

## TOTAL HOURS REQUIRED

<table>
<thead>
<tr>
<th>Units</th>
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<tbody>
<tr>
<td><strong>103</strong></td>
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<tr>
<td>Course</td>
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<tr>
<td>EN 201 Introduction to the Communication Process</td>
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<td>MA 201 Algebra &amp; Trigonometry</td>
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<td>PH 201 Physics of Mechanics</td>
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<td>EN 202 Dynamics of Written Communication</td>
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<td>MA 202 Algebra &amp; Trigonometry</td>
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<td>PH 202 Physics of Electricity &amp; Magnetism</td>
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<td>ME 251 Statics</td>
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<td>EN 203 Technical Report Preparation &amp; Presentation</td>
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<td>MA 203 Applied Calculus</td>
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<td>ME 252 Dynamics</td>
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<td>PH 203 Physics of Heat, Light &amp; Sound</td>
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<tr>
<td>Fourth Quarter</td>
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<tr>
<td>ET 211</td>
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<td>ME 301</td>
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<td>ME 351</td>
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<th>Fifth Quarter</th>
<th>Class</th>
<th>Lab</th>
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<td>ME 302</td>
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<tr>
<td>ME 332</td>
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<tr>
<td>CH 201</td>
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<td>ME 313</td>
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<table>
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<td>ET 304</td>
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<td>0-3</td>
<td>3-4</td>
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<tr>
<td>Human Relations</td>
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<tr>
<td></td>
<td>16-17</td>
<td>8-11</td>
<td>16-17</td>
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</tbody>
</table>
ME 221 Engineering Materials and Manufacturing Process  4 Credits
3 Class Hours, 2 Laboratory Hours

Properties of materials, both metallic and nonmetallic; classes of properties, metallic structure, grain size, equilibrium diagrams, alloys, plastics, and ceramics, material selection, tooling, machinery, sheet forming, hot forging, cold working, finishing, inspection, and packaging.

Prerequisite: MA 201

ME 222 Industrial Safety  3 Credits
3 Class Hours

Standards agencies, industrial safety criteria, and engineering factors involved in meeting safety standards.

Prerequisite: None

ME 223 Shop Practices  3 Credits
1 Class Hour, 6 Laboratory Hours

Introduction to the use of machine tools and to various welding methods with emphasis on limitations and capabilities. Emphasis will be placed on the student's field of study.

(Note 1)

ME 242 Metallurgy  4 Credits
3 Class Hours, 3 Laboratory Hours

Crystal structure, phase diagrams, phase changes, mechanical properties, hardening of metals, annealing, heat treating equipment and operations, casting, alloys, and power.

Prerequisites: ME 221, 251

ME 251 Mechanics  5 Credits
4 Class Hours, 2 Laboratory Hours

Static Forces, vectors, resultants, equilibrium, free-body diagrams, trusses, center of mass, three-dimensional statics, moment of inertia, friction, displacement, velocity, acceleration and inertial forces.

Prerequisites: PH 201, MA 201

Note 1: Topics presented on a demand basis.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ME 252</td>
<td>Mechanics</td>
<td>5</td>
<td>Class Hours, Laboratory Hours</td>
</tr>
<tr>
<td></td>
<td>Dynamic forces, Newton's Second Law, centrifugal and centripetal forces, work, energy, impulse, momentum and vibrations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prerequisites:</td>
<td>ME 251</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME 301</td>
<td>Machine Elements</td>
<td>4</td>
<td>Class Hours, Laboratory Hours</td>
</tr>
<tr>
<td></td>
<td>Friction, lubrication, bearings, shaft designs, fasteners, weld design, belting, chain drives, brakes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prerequisites:</td>
<td>ME 251, 221</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME 302</td>
<td>Machine Elements</td>
<td>4</td>
<td>Class Hours, Laboratory Hours</td>
</tr>
<tr>
<td></td>
<td>Clutches, power screws, gears, cams, springs, fly wheel-design project and special topics.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prerequisite:</td>
<td>ME 301</td>
<td></td>
<td></td>
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<tr>
<td>ME 311</td>
<td>Fluid Mechanics</td>
<td>4</td>
<td>Class Hours, Laboratory Hours</td>
</tr>
<tr>
<td>Prerequisites:</td>
<td>ME 251, 311</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME 313</td>
<td>Heat Transfer and Thermodynamics</td>
<td>4</td>
<td>Class Hours, Laboratory Hours</td>
</tr>
<tr>
<td></td>
<td>Conduction, convection, and radiation heat transfer, steady-state heat conduction, electrical analogy, lumped heat capacity systems, and first law of thermodynamics.</td>
<td></td>
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<tr>
<td>Prerequisite:</td>
<td>MA 203</td>
<td></td>
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</tbody>
</table>
ME 331 Electro-Mechanical Devices  
4 Credits  
3 Class Hours, 3 Laboratory Hours  
DC Generators, DC motors, motor controls, losses and efficiency, singly excited systems, multiply excited systems, AC generators, three-phase synchronous motors, transformers, three-phase induction motors, singly-phase motors, magnetic circuits.  
Prerequisites: ET 202, MA 203

ME 332 Automatic Controls  
4 Credits  
3 Class Hours, 3 Laboratory Hours  
Proportional control, integral control, proportional plus integral control, derivative control, two-position controls, and systems analysis using block diagrams.  
Prerequisite: ME 331

ME 341 Thermodynamics  
3 Credits  
3 Class Hours  
Thermodynamic cycles, first and second laws of thermodynamics, irreversibility, heat engine cycles, and refrigeration cycles.  
Prerequisite: ME 313

ME 343 Heating and Air Conditioning Technology (Note 1)  
4 Credits  
3 Class Hours, 2 Laboratory Hours  
Calculations of heating and air conditioning loads, ventilation requirements, types of fans, unit sizing, dust collection and control.  
Prerequisite: ME 313

ME 351 Mechanics of Materials  
4 Credits  
3 Class Hours, 2 Laboratory Hours  
Stress, strain, Hook's Law, torsion, axial forces, shear and bending moments, pure bending of beams, shearing stresses in beams, deflection in beams and columns.  
Prerequisites: ME 251, 221

Note 1: Topics presented on demand basis.
ME 361 Environmental Noise 3 Credits
2 Class Hours, 2 Laboratory Hours

Noise sources, methods of noise measurement and noise control techniques.

Prerequisite: MA 202

ME 362 Production Planning 3 Credits
3 Class Hours

Objectives, cost estimation, inventory management, production capacities, set-up time and trend analysis.

Prerequisite: None

Note 1: Topics presented on demand basis.
RELATED STUDIES

The Related Studies Department 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 course content and sequencing to accommodate their curricula. The three related areas are English, Mathematics, and Physics.

The English program promotes mastery of the skills of reading, writing, listening, speaking, and reporting—all essential tools of the technician. The necessary, 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.

The Mathematics courses stress the development of both computational skills and reasoning ability in the solution of technological problems. The curriculum presents concepts and processes of mathematics which are vital to scientific and technological progress.

The Physics courses are designed to offer students working knowledge of the basic principles of mechanics, electricity, and magnetism upon which all technological processes depend. An understanding of basic physical laws is essential to the technician's maintaining perspective toward his work, which extends to the successful handling of new and unfamiliar tasks.

Related Studies requirements are listed in the appropriate section for each technology.
EN 101 Reading and Study Improvement  3 Credits
3 Class Hours

Efficient reading with how-to-study suggestions. Equal attention is
given to improving reading rate, comprehension, and word power. The
specialized reading techniques of surveying, skimming, and scanning
are employed and emphasized throughout.

EN 102 Vocabulary Enrichment Module I  1 Credit
Self Study

This self-study course focuses on relatively common words likely to be
encountered in both technical and everyday reading, writing, and speak-
ing situations. Special emphasis is given to related word pairs that
have similar spellings or meanings.

EN 103 Vocabulary Enrichment Module II  1 Credit
Self Study

A self-study course in word architecture. Prefixes, suffixes, and root
word elements likely to be encountered by the technician, with numerous
illustrations of each, are given.

EN 104 Vocabulary Enrichment Module III  1 Credit
Self Study

Self-study continuation of EN 103. More relevant word elements.

EN 201 Speech: Introduction to the Communication Process  3 Credits
3 Class Hours

Listening and speaking, with initial emphasis on interpersonal commu-
nications, group dynamics, and recognizing and responding to the uniqueness
of each instance of communication; followed by assigned formal
speeches, videotaped to facilitate self-criticism.

EN 202 Basic Composition  3 Credits
3 Class Hours

Basic patterns of writing likely to be of use to the technician; the use
of sources, development of a technical vocabulary, and a minimal review
of grammar and spelling as needed.
EN 203 Technical Report Preparation & Presentation  
3 Credits  
3 Class Hours

Organizing, preparing, and writing various types of technical papers and reports, with emphasis upon accuracy, clarity, and conciseness. Includes oral presentation and discussion.

Prerequisites: EN 201, 202

MA 101 General Mathematics and Elementary Algebra  
5 Credits  
5 Class Hours

A study of the fundamentals of arithmetic including fractions, decimals and percentage. Operations with algebraic expressions. Equations, factoring, graphs and basic geometry.

MA 201 Algebra and Trigonometry  
5 Credits  
5 Class Hours

Introduction to trigonometry with topics from geometry. Exponents, roots and radicals. Linear and quadratic equations. Simultaneous linear equations. Functions and graphs.

MA 202 Algebra and Trigonometry  
5 Credits  
5 Class Hours


Prerequisite: MA 201

MA 203 Applied Calculus  
3 Credits  
3 Class Hours

Limits, the derivative, the indefinite integral and the definite integral. Applications of differentiation and integration. Methods of integration. Solutions to differential equations.

Prerequisite: MA 202
MA 204  Probability and Statistics  
3 Credits
3 Class Hours


Prerequisite: MA 202

MA 301  Introduction to Digital Mathematics  
3 Credits
3 Class Hours

The Binary and Octal Systems, basic operations and conversions, binary-coded decimals, truth tables, basic logic, gates, basic laws of Boolean Algebra, and De Morgan's Theorems.

Prerequisite: MA 203

DR 201  Technical Drawing  
2 Credits
6 Laboratory Hours

An introduction to sketching, lettering, orthographic projection, pictorial representation, and auxiliary drawing with the course slanted toward the technology of primary interest to the student.

Prerequisite: None

DR 202  Technical Drawing  
2 Credits
6 Laboratory Hours

Preparation of detail and assembly drawings, sections, and conventions, ortuduction illustration, and shop processes. Structural drawings, piping drawings, and reproduction processes and techniques are also covered in this course.

Prerequisite: DR 201

DR 211  Technical Drawing for Electronics  
2 Credits
6 Laboratory Hours

A brief review of lettering and dimensioning. This course will cover the drawing of electronic symbols, block diagrams, schematic diagrams, cable drawings, printed circuits boards, electro-mechanical drawings, wiring diagrams, pictorials, logic diagrams and integrated circuits.

Prerequisite: None
PH 201 Physics of Mechanics 4 Credits
3 Class Hours, 3 Laboratory Hours

The course covers the major topics of mechanics including vectors, Newton's Laws, work, energy, circular motion, simple machines, impulse and momentum. The laboratory parallels class work and will be used to illustrate lecture principles.

Corequisite: MA 201

PH 202 Physics of Electricity and Magnetism 4 Credits
3 Class Hours, 3 Laboratory Hours

Basic laws and theories of electricity and magnetism. Electric and magnetic fields, electric potential, DC Circuits, electro-magnetic induction, and an introduction to AC Circuits are topics covered. Laboratory work closely parallels class work.

PH 203 Physics of Heat, Light and Sound 4 Credits
3 Class Hours, 3 Laboratory Hours

An introduction to wave motion, sound, thermodynamics, light and optics, and other topics in modern physics.

DP 222 Computer Programming

Computer languages studied are Basic, Forteon and other engineer related computer languages.
STATE BOARD OF EDUCATION

100-A Cordell Hull Building
Nashville, Tennessee 37219
615-741-2966

Governor Ray Blanton

Dr. Sam H. Ingram, Executive Officer
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Oak Ridge, TN 37830

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Electronics Technician
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Oak Ridge, TN 37830
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