

# Technical Institute

JAMES L. MCGRAW, *Director*

## OBJECTIVES

The Technical Institute is a division of the School of Engineering and has as its objective the collegiate education of young men and women to be competent engineering and scientific technicians.

It is the philosophy of the Technical Institute that this objective is best accomplished by:

1. Providing specialized technical courses which emphasize the use of rational thinking and the application of scientific principles to the practical solution of technological problems.
2. Providing courses in mathematics and basic science sufficient to support the technical courses and to prepare the student for future growth.
3. Providing education to prepare the student to communicate intelligently and to take his place in society as a responsible Christian citizen.

## THE ENGINEERING TECHNICIAN

An engineering technician is one who works in the engineering field. His work requires the application of established engineering knowledge and methods combined with technical skills in the support of engineering activities. He differs from the craftsman and the draftsman in his knowledge of engineering theory and methods. He also differs from the engineer in his more specialized background and his use of technical skills.

It should be noted that the engineering technician is concerned with the *application* of established scientific and engineering knowledge and methods. Therefore, Technical Institute programs consist of courses especially designed to emphasize the *use* of engineering knowledge. The engineering technician, as stated above, works in the support of engineering activities. He is usually involved in the design, testing, sales, and construction of products, and in some instances the supervision of craftsmen or other technicians. The engineering technician is a definite part of the scientific-engineering team. He works with the scientist who develops the theory, the engineer who seeks means of making effective use of this theory, and the skilled craftsman who works with tools to construct the finished product.

The current shortage of engineers has increased the use of engineering technicians by industry and engineering technicians themselves are in short supply. The need for competent engineering technicians educated at the college level is high and the future holds a bright prospect for those who are in this field.

## **PROGRAMS OFFERED**

### **Associate Degree Curricula**

The Technical Institute offers programs in chemical technology, electronic engineering technology, industrial engineering technology, and mechanical engineering technology leading to the associate degree. These programs are five terms in length and include specialized technical subjects, non-technical subjects, mathematics and science. Upon satisfactory completion of the prescribed courses in the programs outlined on the following pages the student is awarded the Associate in Technology degree. The holder of such a degree is prepared to enter industry as a beginning engineering technician.

### **Bachelor of Technology Degree**

Since education is a lifelong process, some engineering technicians desire to continue their education. In particular, many wish to broaden their technical background to include areas other than their associate degree specialization. The objectives of the Bachelor of Technology program are to offer graduates from the associate degree programs the opportunity to broaden themselves technically as well as culturally. The requirements for this degree are outlined in the program on a following page.

## **GUIDANCE AND COUNSELING**

The facilities of the Guidance Center are available for Technical Institute students. Staff members experienced in this type of program will be on hand before and during registration. Prospective students are encouraged to visit the campus or telephone for information regarding any of the programs offered.

## **CREDITS**

All courses in the Technical Institute are evaluated on a semester hour basis. Recitation and similar classroom work generally require outside preparation, while laboratory or practice periods are usually self-contained.

## **CHEMICAL TECHNOLOGY**

Chemical technology is designed to prepare students for technological services in chemical manufacturing plants and processing industries as well as for technical positions in chemical laboratories.

Emphasis is placed upon laboratory procedures for basic chemical analysis, especially quantitative analysis, certain non-technical subjects, mathematics, and physics.

**PROGRAM—T1: ASSOCIATE IN TECHNOLOGY WITH MAJOR IN  
CHEMICAL TECHNOLOGY**

<i>Dept.</i>	<i>No.</i>	<i>Course</i>	<i>1st Term<sup>1</sup></i>	<i>2nd Term</i>	<i>3rd Term</i>
<i>Freshman Year</i>					
CTI	125	Inorganic Chemistry		3-3-4	
ITI	101	Industrial Organization & Production		3-0-3	
MTI	103L	Technical Drawing		0-6-2	
STI	150	Introduction to Engineering Technology	1-0-1		
PHL	106	Basic Problems in Philosophy I	3-0-3		
STI	105-6	Technical Institute Mathematics	3-0-3	3-0-3	
STI	114	Physics: Mechanics		2-2-2½	
CTI	122	General Chemistry	3-3-4		
ENG	101	Language and Thought	3-0-3		
STI	134	Effective Speaking		2-0-2	
THL <sup>2</sup>	112	Foundations in Theology	3-0-3		
			17	16½	
<i>Sophomore Year</i>					
CTI	202	Quantitative Analysis	3-6-5		
CTI	203	Physical Chemistry		3-3-4	
CTI	206	Instrumentation		3-0-3	
CTI	208-9	Organic Chemistry	3-3-4	3-3-4	
ITI	203	Elements of Supervision	2-0-2		
STI	213	Physics: Electricity		2-2-2½	
STI	214	Physics: Heat, Light and Sound	2-2-2½		
STI	252	American Political Ideas		3-0-3	
THL <sup>2</sup>	—	Theology elective	3-0-3		
			16½	16½	
<i>Junior Year</i>					
CTI	309	Chemical Engineering Technology Calculations	3-0-3		
CTI	305	Materials Science	3-0-3		
CTI	308	Chemical Engineering Technology	2-3-3		
PHL	206	Basic Problems in Philosophy II	3-0-3		
STI	234	Report Writing	2-0-2		
STI	251	Economics of Industry	3-0-3		
			17		

<sup>1</sup>Under "Term," 3-0-3 means 3 hrs. class, 0 hrs. laboratory, 3 hrs. credit.

<sup>2</sup>Non-Catholic students may substitute a humanistic-social elective.

**ELECTRONIC ENGINEERING TECHNOLOGY**

Electronic engineering technology is designed to prepare students for services as engineering technicians in the modern industrial world. Emphasis is placed on the fundamentals of circuit-theory, electronics, and measurements in addition to related courses in mathematics, physics, and chemistry. The graduate is thus prepared to perform research and development, serve with manufacturers of electronic equipment, and with users of modern electrical and electronic devices. An E.C.P.D. accredited Engineering Technology curriculum.

**PROGRAM—T2: ASSOCIATE IN TECHNOLOGY WITH MAJOR IN  
ELECTRONIC ENGINEERING TECHNOLOGY**

<i>Dept.</i>	<i>No.</i>	<i>Course</i>	<i>1st Term<sup>1</sup></i>	<i>2nd Term</i>	<i>3rd Term</i>
<i>Freshman Year</i>					
ENG	101	Language and Thought	3-0-3		
ETI	102	Elements of Electrical Technology I		3-0-3	
ITI	101	Industrial Organization and Production	3-0-3		
ITI	203	Elements of Supervision		2-0-2	
PHL	106	Basic Problems in Philosophy I	3-0-3		
PHL	206	Basic Problems in Philosophy II		3-0-3	
STI	150	Introduction to Engineering Technology	1-0-1		
STI	105-6	Technical Institute Mathematics	3-0-3	3-0-3	
CTI	122	General Chemistry		3-3-4	
STI	134	Effective Speaking		2-0-2	
THL <sup>2</sup>	112	Fundamentals in Theology	3-0-3		
			16	17	
<i>Sophomore Year</i>					
ETI	103	Elements of Electrical Technology II	3-3-4		
ETI	204	Electrical Measurements	2-3-3		
ETI	205	Electronic Measurements		3-3-4	
ETI	206	Electron Devices I		3-3-4	
ETI	222L	Electronic Circuit Diagrams	0-3-1		
ETI	300	Seminar	1-0-0	1-0-0	
ETI	324	Digital Computer Fundamentals		3-3-3	
STI	114	Physics: Mechanics	2-2-2½		
STI	205	Mathematics for Electrical Technology	3-0-3		
STI	214	Physics: Heat, Light and Sound		2-2-2½	
STI	251	Economics of Industry		3-0-3	
THL <sup>2</sup>	—	Theology Elective	3-0-3		
			16½	16½	

**PROGRAM—T2—Continued**

<i>Dept.</i>	<i>No.</i>	<i>Course</i>	<i>1st Term</i> <sup>1</sup>	<i>2nd Term</i>	<i>3rd Term</i>
<i>Junior Year</i>					
ETI	300	Seminar	1-0-0		
ETI	306	Electron Devices II	3-3-4		
ETI	327	Pulse Circuit Fundamentals	3-1-4		
ETI	328	Electronic Communications	3-3-4		
ETI	330	Special Electronic Projects	1-0-1		
STI	234	Report Writing	2-0-2		
STI	252	American Political Ideas	3-0-3		
			18		

<sup>1</sup>Under "Term," 3-0-3 means 3 hrs. class, 0 hrs. laboratory, 3 hrs. credit.

<sup>2</sup>Non-Catholic students may substitute a humanistic-social elective.

**INDUSTRIAL ENGINEERING TECHNOLOGY**

The curriculum in industrial engineering technology has as its objective the implementation of the broad purposes of the University in a college program of technical education by:

- (1) Providing education to prepare students for subsequent development as responsible Christian citizens;
- (2) Providing education in mathematics and basic sciences sufficient to support the specialized technical portion of the curriculum and to increase the student's awareness of fundamental scientific principles in order to facilitate his future growth in an advancing technology;
- (3) Providing specialized education designed to prepare students primarily for technological services to management in such industrial engineering areas as production, operations and control. It also covers the essentials of management with which foremen, supervisors, and administrative personnel in general are concerned.

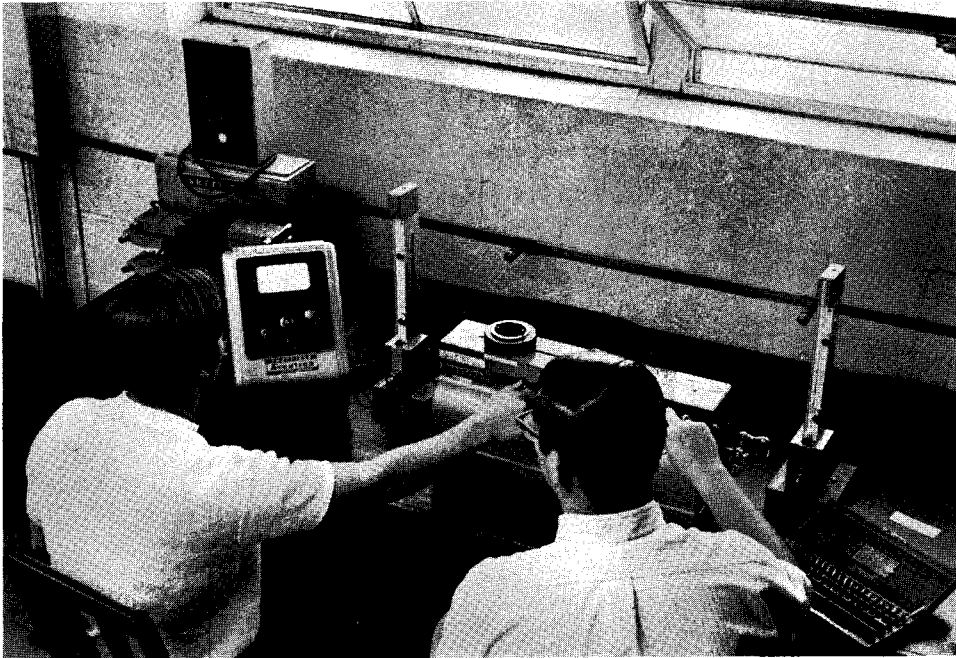
Emphasis is placed on courses in motion and time study, production control, plant layout, quality control, and cost control. An E.C.P.D. accredited Engineering Technology curriculum.

**PROGRAM—T3: ASSOCIATE IN TECHNOLOGY WITH MAJOR IN  
INDUSTRIAL ENGINEERING TECHNOLOGY**

<i>Dept.</i>	<i>No.</i>	<i>Course</i>	<i>1st Term</i> <sup>1</sup>	<i>2nd Term</i>	<i>3rd Term</i>
<i>Freshman Year</i>					
ITI	101	Industrial Organization and Production	3-0-3		
ITI	104	Industrial Materials and Processes		3-0-3	
MTI	103L	Technical Drawing		0-6-2	
MTI	106L	Testing and Measurements		0-3-1	
MTI	107L	Machine Tool Operation		0-3-1	
STI	150	Introduction to Engineering Technology	1-0-1		
PHL	106	Basic Problems in Philosophy I	3-0-3		
STI	105-6	Technical Institute Mathematics	3-0-3	3-0-3	
STI	114	Physics: Mechanics		2-2-2½	
ENG	101	Language and Thought	3-0-3		
STI	134	Effective Speaking		2-0-2	
STI	234	Report Writing		2-0-2	
THL <sup>2</sup>	112	Foundations in Theology	3-0-3		
			16	16½	
<i>Sophomore Year</i>					
ITI	108	Production Methods and Control	3-0-3		
ITI	203	Elements of Supervision		2-0-2	
ITI	215	Elements of Cost Control	2-0-2		
ITI	216	Quantitative Methods in Ind. Eng. Tech.		3-0-3	
ITI	217	Industrial Economic Analysis		3-0-3	
ITI	230	Motion and Time Study I		2-3-3	
MTI	213	Industrial Mechanisms	3-0-3		
CTI	122	General Chemistry	3-3-4		
STI	213	Physics: Electricity		2-2-2½	
STI	214	Physics: Heat, Light and Sound	2-2-2½		
STI	251	Economics of Industry		3-0-3	
THL <sup>2</sup>	—	Theology elective	3-0-3		
			17½	16½	
<i>Junior Year</i>					
ITI	305	Labor and Wage Administration	3-0-3		
ITI	318	Statistical Quality Control	3-0-3		
ITI	331	Motion and Time Study II	2-3-3		
ITI	332	Plant Layout	2-3-3		
PHL	206	Basic Problems in Philosophy II	3-0-3		
STI	252	American Political Ideas	3-0-3		
			18		

<sup>1</sup>Under "Term," 3-0-3 means 3 hrs. class, 0 hrs. laboratory, 3 hrs. credit.

<sup>2</sup>Non-Catholic students may substitute a humanistic-social elective.



## MECHANICAL ENGINEERING TECHNOLOGY

This curriculum is designed to give the student a practical knowledge of the modern fundamental principles of mechanical engineering technology as they are applied in industrial and scientific endeavor.

Emphasis is placed on courses in applied mechanics; strength of materials; mechanisms; thermodynamics; fluid mechanics; industrial automation actuation; dies, jig and fixture design; machine design, and basic technical courses such as technical drawing, physics, mathematics and chemistry.

The non-technical courses English, speech and report writing are specially designed to teach a student how to formulate and deliver technical communications, both oral and written.

Typical mechanical engineering technician assignments are research and development laboratory technician, designer, technical report writer, erection and maintenance technician, technical sales, field service and customer relations technician, plant engineering technician and industrial automation actuation technician. An E.C.P.D. accredited Engineering Technology curriculum.

**PROGRAM—T4: ASSOCIATE IN TECHNOLOGY WITH MAJOR IN  
MECHANICAL ENGINEERING TECHNOLOGY**

<i>Dept.</i>	<i>No.</i>	<i>Course</i>	<i>1st Term<sup>1</sup></i>	<i>2nd Term</i>	<i>3rd Term</i>
<i>Freshman Year</i>					
ITI	101	Industrial Organization and Production	3-0-3		
ITI	104	Industrial Materials and Processes		3-0-3	
MTI	103L	Technical Drawing		0-6-2	
STI	150	Introduction to Engineering Technology	1-0-1		
PHL	106	Basic Problems in Philosophy I	3-0-3		
STI	105-6	Technical Institute Mathematics	3-0-3	3-0-3	
STI	114	Physics: Mechanics		2-2-2½	
CTI	122	General Chemistry		3-3-4	
ENG	101	Language and Thought	3-0-3		
STI	234	Report Writing		2-0-2	
THL <sup>2</sup>	112	Foundations in Theology	3-0-3		
			16	16½	
<i>Sophomore Year</i>					
ITI	203	Elements of Supervision	2-0-2		
MTI	104L	Graphical Computations	0-6-2		
MTI	106L	Testing and Measurements	0-3-1		
MTI	107L	Machine Tool Operation		0-3-1	
MTI	221	Strength of Materials		3-0-3	
MTI	224	Statics	2-0-2		
MTI	225	Dynamics	2-0-2		
MTI	226L	Mechanisms	1-3-2		
MTI	321L	Dies, Jigs, and Fixtures		1-3-2	
MTI	230	Thermodynamics		2-0-2	
MTI	231	Fluid Mechanics		3-0-3	
STI	206	Mathematics for Mechanical Engineering Technology	3-0-3		
STI	213	Physics: Electricity		2-2-2½	
STI	214	Physics: Heat, Light and Sound	2-2-2½		
STI	252	American Political Ideas		3-0-3	
			16½	16½	



**PROGRAM—T4—Continued**

<i>Dept.</i>	<i>No.</i>	<i>Course</i>	<i>1st Term<sup>1</sup></i>	<i>2nd Term</i>	<i>3rd Term</i>
<i>Junior Year</i>					
MTI	328	Industrial Automation Actuation	2-3-3		
MTI	323	Machine Design	2-3-3		
PHL	206	Basic Problems in Philosophy II	3-0-3		
STI	134	Effective Speaking	2-0-2		
STI	251	Economics of Industry	3-0-3		
THL <sup>2</sup>	—	Theology elective	3-0-3		
			17		

<sup>1</sup>Under "Term," 3-0-3 means 3 hrs. class, 0 hrs. laboratory, 3 hrs. credit.

<sup>2</sup>Non-Catholic students may substitute a humanistic-social elective.

**BACHELOR OF TECHNOLOGY**

The curriculum is designed to provide the opportunity for those who hold the Associate in Technology degree to continue their education. Emphasis is placed upon broadening the student's technical knowledge. Flexibility in the curriculum permits the student with his advisor's consent to plan an individual program based on his needs, interests, educational background and occupational objectives.

**PROGRAM—T5: BACHELOR OF TECHNOLOGY**

Degree requirements for the Bachelor of Technology:

- A. Completion of the requirements for the Associate in Technology degree.
- B. Completion of a minimum 46 additional credit hours distributed as follows:

<i>Dept.</i>	<i>No.</i>	<i>Course</i>	<i>Credits</i>
—	—	English electives	6
STI	305	Advanced Technical Institute Mathematics II	3
PSY	201	Introductory Psychology	3
—	—	General Elective	3
—	—	Humanistic-Social Electives	9
—	—	Approved Technical Electives	21
STI	499A	Seminar	1
STI	499B	Seminar	0
			46

