IX
School of Engineering

MAURICE GRANEY, *Dean*

GENERAL STATEMENT

The School of Engineering has as its purpose the implementation of the general purposes of the University of Dayton in the development of professional attitudes and competencies within its area of academic disciplines.

The engineering curricula in each of the fields of chemical, civil, electrical, industrial, and mechanical engineering are drawn up for a four year minimum period with one summer session required in civil engineering.

No effort is spared to acquaint the student thoroughly with fundamental principles and to give him a clear insight into the analysis of engineering problems. While emphasis is laid on fundamental theory, continued attention is paid to the solution of practical problems for the purpose of illustrating scientific principles and pointing out their industrial applications.

The broader responsibilities of the engineering profession demand that the professional training of an engineer include at least an acquaintance with the humanities in order that scientific discoveries and developments by engineers may result in the real advancement of man. To help the young engineer achieve his purpose in life, the University offers, in addition to the prescribed engineering subjects, a wide selection of courses in the arts and sciences and business administration.

ENGINEERING ORIENTATION LECTURES

All entering freshmen are required to attend a series of orientation lectures one hour a week for the first semester of enrollment. These lectures are intended to acquaint the student with the School of Engineering, academic requirements, and the various fields of engineering.

ENGINEERING MATHEMATICS

Students admitted to the School of Engineering are required to take certain qualifying tests for the proper placement in the mathematics sequence.

All sudents who make sufficiently high scores on the proficiency test will be placed in MTH 216, Analytic Geometry and Calculus I. Those who do not will be placed in a lower mathematics course, and will require additional time to complete the requirements for graduation.

DEGREE REQUIREMENTS

The Degrees—Bachelor of Chemical, Civil, Electrical, Industrial, and Mechanical Engineering— are conferred at commencement if the following requirements have been fulfilled:

1) All prescribed courses outlined in the respective curricula must have been passed with a grade D or better;
2) The cumulative quality point average must be at least 2.0;
3) The student must have attended the School of Engineering at the University of Dayton during his senior year, and have carried at least thirty credit hours.

CURRICULUM FOR ALL ENGINEERING FRESHMEN

Dept.	*No.*	*Course*	*1st Term*[1]	*2nd Term*	*3rd Term*
CHM	123-24	General Chemistry	3-3-4	3-3-4	
ENG	101-2	English Composition	3-0-3	3-0-3	
MTH*	216-17	Analytic Geometry & Calculus	5-0-5	4-0-4	
MEE[2]	206L	Engineering Graphics		0-6-2	
MIL[3]	101-2	First Year Basic Course	2-1-1	2-1-1	
ORI	100	Orientation	1-0-0		
PHL	103	Logic			3-0-3
PHY	206	General Physics		3-2-4	
SPE[3]	101	Fundamentals of Effective Speaking	3-0-3		
THL[4]	106	Dogmatic Theology			3-0-3
			16	18	6

[1] Under "Term," 3-0-3 means 3 hrs. class, 0 hrs. laboratory, and 3 hrs. credit.
[2] Assigned first or second term at the discretion of the School of Engineering.
[3] Women take Phe 110-1.
[4] Non-Catholics take Phl 207.

CHEMICAL ENGINEERING

The objective of the curriculum in Chemical Engineering is the training of students for design, construction and operation of chemical equipment. Chemical Engineering applies the principles of the physical sciences, economics and human relations to fields that pertain to processes and process equipment in which matter is treated to effect a change in state, energy or composition.

The first part of the curriculum provides a firm foundation in mathematics, physics and chemistry. The chemistry background is stressed in Chemical Engineering. Courses include inorganic, organic, analytical and physical chemistry. The second part of the curriculum stresses chemical engineering topics such as transport phenomena, thermodynamics, kinetics, unit operations and processes, industrial instrumentation, materials of construction and design.

The Chemical Engineering department is located in Wohlleben Hall. Three stories of the north wing house the Unit Operations Laboratory. Experimental equipment includes units for the study of fluid flow, heat transfer, distillation extraction, filtration, evaporation and drying. The Industrial Instrumentation and Transport Phenomena Laboratories are located on the second floor. In addition to the instructional laboratories, the department has a wood working shop, pipe fitting shop, analytical laboratory

and dark room. The department has its own analog computer and a Burroughs 220 digital computer is available for use in the Research Institute.

The curriculum in Chemical Engineering serves as basic training for graduate study or for positions in diverse areas of the chemical industry.

PROGRAM—EN1: BACHELOR OF SCIENCE WITH A MAJOR IN CHEMICAL ENGINEERING

Dept.	*No.*	*Course*	*1st Term*[1]	*2nd Term*	*3rd Term*
		Sophomore Year			
CME	202	Chemical Engineering Fundamentals I	3-0-3		
CHM	215	Quantitative Analysis	2-0-2		
CHM	217L	Quantitative Analysis Lab	0-3-1		
CHM	315	Organic Chemistry		3-0-3	
CHM	313L	Organic Chemistry Lab		0-3-1	
EGM	202	Statics		3-0-3	
MTH	218	Analytic Geometry & Calculus	4-0-4		
MTH	301	Differential Equations		3-0-3	
MIL[2]	201-2	Second Year Basic	2-1-1	2-1-1	
PHL[3]	207	Philosophical Psychology	3-0-3		
PHY	207-8	General Physics	3-2-4	3-2-4	
THL[4]	206	General Moral Theology		3-0-3	
			18	18	
		Junior Year			
CME	303	Chemical Engineering Fundamentals II		3-0-3	
CME	321-22	Chemical Engineering Operations	3-0-3	3-0-3	
CME	323L	Transport Phenomena Lab		0-3-1	
CME	421	Seminar	1-0-0	1-0-0	
CME	481	Engineering Calculations	3-0-3		
CME	303-4	Physical Chemistry	3-3-4	3-3-4	
CHM	316	Organic Chemistry	3-0-3		
CHM	314L	Organic Chemistry Lab	0-3-1		
EGM	303	Strength of Materials		3-0-3	
ELE	321	Basic Electric Theory	3-0-3		
ELE	322	Fundamentals of Engineering Electronics		2-2-3	
			17	17	
		Senior Year			
CME	304	Chemical Engineering Fundamentals III	3-0-3		
CME	411	Unit Operations	3-0-3		
CME	413-14L	Unit Operations Lab	0-5-2	0-5-2	
CME	421	Seminar	1-0-1	1-0-1	
CME	430	Chemical Engineering Design		3-0-3	
CME	451	Industrial Instrumentation	2-0-2		
CME	452L	Industrial Instrumentation Lab		0-5-2	
PHL[5]	306	Epistemology	3-0-3		
PHL[6]	402	General Metaphysics		3-0-3	
THL[7]	306	Theology and Moral Virtues	3-0-3		
THL[7]	406	Christology and the Sacraments		3-0-3	
——[8]	—	Chemical Engineering Elective		3-0-3	
			17	17	

[1] Under "Term," 3-0-3 means 3 hrs. class, 0 hrs. laboratory, and 3 hrs. credit.
[2] Women take Phe 210-1.
[3] Non-Catholics take Phl 306.
[4] Non-Catholics take Phl 402.
[5] Non-Catholics take Phl 403.
[6] Non-Catholics take Phl 404.
[7] Non-Catholics take approved Humanistic-Social Studies elective.
[8] Chemical Engineering Electives: Cme 499 Cme 501, Cme 502, Cme 503, Cme 504.

CIVIL ENGINEERING

The curriculum is designed to give a thorough education in the principles fundamental to the civil engineering profession, so that the graduate is prepared to pursue to advantage any field of civil practice or advanced study.

During the first two years, emphasis is placed on those subjects underlying all engineering—English, mathematics, chemistry, physics, drawing, surveying, mechanics. The third and fourth years are devoted principally to technical subjects relative to hydraulic, sanitary, structural, highway, and soils engineering.

Engineering projects, completed or under construction, are visited under the guidance of the instructors. The Student Chapter of the American Society of Civil Engineers is very active, and close association is maintained with the Dayton Section of the American Society of Civil Engineers.

PROGRAM—EN2: BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING

Dept.	*No.*	*Course*	*1st Term*[1]	*2nd Term*	*3rd Term*
		Sophomore Year			
CIE	207-8	Surveying	4-0-4	3-0-3	
CIE[2]	205L	Survey Field Practice			3-0-3
EGM	202	Statics	3-0-3		
EGM	303	Strength of Materials		3-0-3	
GEO	218	Engineering Geology		3-0-3	
MEE	207L	Engineering Graphics	0-6-2		
MTH	218	Analytic Geometry & Calculus	4-0-4		
MTH	301	Differential Equations			3-0-3
MIL[3]	201-2	Second Year Basic	2-1-1	2-1-1	
PHL[4]	207	Philosophical Phychology		3-0-3	
PHY	207-8	General Physics	3-2-4	3-2-4	
THL[5]	206	General Moral Theology			3-0-3
			18	17	9
		Junior Year			
CIE	306	Theory of Structures	5-0-5		
CIE	307	Hydraulics	4-3-5		
CIE	310L	Civil Engineering Lab	0-3-1		
CIE	406	Indeterminate Structures		3-0-3	
CIE	312	Soil Mechanics		3-3-4	
EGM	301	Dynamics	3-0-3		
EGM	304	Advanced Strength of Materials		3-0-3	
ELE	321	Basic Electric Theory	3-0-3		
ELE	322	Fundamentals of Engineering Electronics		2-2-3	
PHL[6]	306	Epistomology			3-0-3
THL[7]	306	Theology and Moral Virtues		3-0-3	
THL[7]	406	Christology and the Sacraments			3-0-3
			17	16	6
		Senior Year			
CIE	402	Structural Design		2-6-4	
CIE	405	Highway Engineering	3-0-3		
CIE	407	Reinforced Concrete	4-0-4		
CIE	408	Seminar		1-0-1	
CIE	415	Structural Design	3-0-3		
CIE	433-34	Sanitary Engineering	3-0-3	3-0-3	
MEE	301	Thermodynamics	3-0-3		
PHL[8]	402	General Metaphysics		3-0-3	
——[9]	—	Civil Engineering Electives		6-0-6	
			16	17	

[1] Under "Term," 3-0-3 means 3 hrs. class, 0 hrs. laboratory, and 3 hrs. credit.
[2] Summer after Sophomore year, Cie 205L, Surveying Field Practice (three weeks special summer schedule which does not conflict with regular third term).
[3] Women take Phe 210-1.
[4] Non-Catholics take Phl 306.
[5] Non-Catholics take Phl 402.
[6] Non-Catholics take Phl 403.
[7] Non-Catholics take Humanistic-Social Studies elective.
[8] Non-Catholics take Phl 404.
[9] Civil Engineering Electives: Cie 421, Cie 422, Cie 499, Cie 502, Cie 504, Cie 506, Cie 524, Cie 542, Cie 544.

ELECTRICAL ENGINEERING

The curriculum of Electrical Engineering is planned with the primary objective of providing a thorough knowledge of the fundamental laws of electricity and the application of these laws in Electrical Engineering.

Courses are arranged to give students of Electrical Enginering an understanding of the basic principles and practices in the fields of Electrical Power and Electrical Communications. Some degree of specialization in these fields is provided according to the abilities and interests of the individual students.

Proper attention is directed to an appreciation of the practical economic factors in the electrical world, and to the cultural and social qualities necessary for a successful career in the engineering profession.

PROGRAM—EN3: BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING

Dept.	*No.*	*Course*	*1st Term*[1]	*2nd Term*	*3rd Term*
		Sophomore Year			
EGM	202	Statistics	3-0-3		
ELE	307	Electrical Measurements		3-2-4	
ELE	201	Elements of Electrical Engineering	3-0-3		
ELE	205	A.C. Circuits		3-0-3	
MTH	218	Analytic Geometry & Calculus	4-0-4		
MTH	341	Advanced Engineering Mathematics		3-0-3	
MIL[2]	201-2	Second Year Basic	2-1-1	2-1-1	
PHL[3]	207	Philosophical Psychology	3-0-3		
PHY	207-8	General Physics	3-2-4	3-2-4	
THL[4]	206	General Moral Theology		3-0-3	
			18	18	
		Junior Year			
EGM	303	Strength of Materials	3-0-3		
EGM	301	Dynamics	3-0-3		
ELE	310	Circuit Analysis		3-2-4	
ELE	312-13	Engineering Electronics	3-2-4	3-2-4	
ELE	318	Machinery I		3-0-3	
ELE	410	Seminar	1-0-0	1-0-0	
ELE	411	Field Theory		3-0-3	
MTH	342	Advanced Engineering Mathematics	3-0-3		
PHL[5]	306	Epistomology	3-0-3		
THL[6]	306	Theology and Moral Virtues		3-0-3	
			16	17	
		Senior Year			
ELE	403	Machinery II	3-2-4		
ELE	408	Electrical Transients	3-0-3		
ELE	410	Seminar	1-0-0	1-0-1	
ELE	413	Communication Engineering	3-2-4		
ELE	414	Advanced Electronics		3-0-3	
INE	313	Engineering Law		2-0-2	
MEE	301	Thermodynamics		3-0-3	
PHL[7]	402	General Metaphysics	3-0-3		
THL[6]	406	Christology and the Sacraments		3-0-3	
——[8]	—	Electrical Engineering Electives	3-0-3	3-0-3	
			17	15	

[1] Under "Term," 3-0-3 means 3 hrs. class, 0 hrs. laboratory, and 3 hrs. credit.
[2] Women take Phe 210-1.
[3] Non-Catholics take Phl 306.
[4] Non-Catholics take Phl 402.
[5] Non-Catholics take Phl 403.
[6] Non-Catholics take approved Humanistic-Social Studies elective.
[7] Non-Catholics take Phl 404.
[8] Electrical Engineering Electives: Ele 415, Ele 417, Ele 419, Ele 499, Ele 502, Ele 503, Ele 504 Ele 511, Ele 512, Mth 343.

INDUSTRIAL ENGINEERING

The Industrial Engineering profession applies creative ability in a scientific manner to the design, installation, or improvement of complex integrated systems involving physical resources such as machinery, equipment, materials, and money; so that people may be more effective in reaching their objectives.

The profession emphasizes the *combination* and *integration* of knowledge from many disciplines. It strives to utilize *scientific methods* to arrive at proper relationships of men, materials, machinery, and money and in *design of systems.* The industrial engineer is, therefore, required to call upon many other specialists for detailed knowledge of specialized components of the systems. These may involve many other branches of engineering, other scientific and non-scientific disciplines.

In emphasizing accomplishment, industrial engineering represents the engineering approach to management (the responsibility for achieving objectives through people). However, industrial engineering principles and practices are useful to all areas of human industry—where employment is purposeful and systematic; where men give attention to achievement and are diligent in their attempts to accomplish objectives, especially where land, capital, and labor meet and must be economically and efficiently related.

In accord with the objectives of the University, the industrial engineering curriculum reflects the understanding that the tasks which people perform are subordinate to the people themselves. Therefore, the industrial engineering curriculum is designed to help the student develop sound religious and moral convictions, broad knowledge and basic intellectual habits, physical vigor and emotional stability, a keen awareness of social responsibility along with his specialized professional attitudes and competencies.

PROGRAM—EN4: BACHELOR OF SCIENCE WITH A MAJOR IN INDUSTRIAL ENGINEERING

Dept.	*No.*	*Course*	*1st Term*[1]	*2nd Term*	*3rd Term*
		Sophomore Year			
CPS	231	Introduction to Digital Computers I		2-0-2	
ECO	201	Economics	3-0-3		
EGM	202	Statics	3-0-3		
EGM	301	Dynamics		3-0-3	
INE	401	Engineering Economy		2-0-2	
MTH	218	Analytic Geometry & Calculus	4-0-4		
MTH	331	Statistics		3-0-3	
MIL[2]	201-2	Second Year Basic	2-1-1	2-1-1	
PHL[3]	207	Philosophical Psychology	3-0-3		
PHY	207-8	General Physics	3-2-4	3-2-4	
PSY	204	General Psychology			3-0-3
THL[4]	206	General Moral Theology			3-0-3
			18	15	6
		Junior Year			
CPS	311	Mathematical Methods for Digital Computers I	3-0-3		
ELE	321	Basic Electric Theory	3-0-3		
ELE	322	Fundamentals of Engineering Electronics		2-2-3	
INE	201	Industrial Engineering Fundamentals	3-0-3		
INE	332	Statistical Control & Systems Design	3-0-3		
INE	405	Production Planning		3-0-3	
INE	310	Engineering Systems Design I		3-0-3	
INE	408	Administration and Organization		3-0-3	
PHL[5]	306	Epistomology	3-0-3		
PHL[6]	402	General Metaphysics			3-0-3
THL[7]	306	Theology and Moral Virtues		3-0-3	
THL[7]	406	Christology and the Sacraments			3-0-3
			15	15	6
		Senior Year			
INE	403-4	Time and Motion Study	3-0-3	3-0-3	
INE	421-22	Reliability	3-0-3	3-0-3	
INE	301-3	Personnel & Wage Administration	3-0-3	3-0-3	
INE	406	Plant Layout	3-0-3	3-0-3	
——[8]	—	Industrial Engineering electives	3-0-3	3-0-3	
			15	15	

[1] Under "Term," 3-0-3 means 3 hrs. class, 0 hrs. laboratory, and 3 hrs. credit.
[2] Women take Phe 210-1.
[3] Non-Catholics take Phl 306.
[4] Non-Catholics take Phl 402.
[5] Non-Catholics take Phl 403.
[6] Non-Catholics take Phl 404.
[7] Non-Catholics take approved Humanistic-Social Studies electives.
[8] Industrial Engineering Electives: Ine 311, Ine 320, Ine 321, Ine 422, Ine 499.

MECHANICAL ENGINEERING

The curriculum of Mechanical Engineering is designed to give the student knowledge of the fundamental principles of science and the application of these principles to pertinent problems.

Basic studies in mathematics and the sciences are pursued in the first two years and departmental subjects are taken up in the last two years. The course of studies comprises lectures, recitations and discussions, laboratory practice, and inspection visits.

Every attempt is made to impress the student with the responsibilities that rest upon the Mechanical Engineer in the active field, whether engaged as designer, builder, operator, organizer, manager or executive.

PROGRAM—EN5: BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING

Dept.	*No.*	*Course*	*1st Term*[1]	*2nd Term*	*3rd Term*
		Sophomore Year			
EGM	202	Statics	3-0-3		
EGM	301	Dynamics		3-0-3	
ELE	321	Basic Electric Theory		3-0-3	
MTH	218	Analytic Geometry & Calculus	4-0-4		
MTH	321	Advanced Engineering Mathematics		3-0-3	
MEE	207L	Engineering Graphics	0-6-2		
MEE	211	Materials & Processes		2-3-3	
MIL[2]	201-2	Second Year Basic	2-1-1	2-1-1	
PHL[3]	207	Philosophical Psychology			3-0-3
PHY	207-8	General Physics	3-2-4	3-2-4	
THL[4]	206	General Moral Theology	3-0-3		
THL[5]	306	Theology and Moral Virtues			3-0-3
			17	17	6
		Junior Year			
EGM	303	Strength of Materials	3-0-3		
EGM	304	Advanced Strength of Materials		3-0-3	
EGM	305L	Materials Testing Lab	0-3-1		
ELE	322	Fundamentals of Engineering Electronics	2-2-3		
MEE	301-2	Thermodynamics	3-0-3	3-0-3	
MEE	303	Metallurgy		2-3-3	
MEE	305L	Mechanical Engineering Lab	0-3-1		
MEE	308	Fluid Mechanics	3-0-3		
MEE	310	Thermal Engineering		3-0-3	
MEE	311	Theory of Machines		3-6-5	
MEE	414	Seminar	1-0-0	1-0-0	
PHL[6]	306	Epistomology	3-0-3		
PHL[7]	402	General Metaphysics			3-0-3
THL[7]	406	Christology and the Sacraments			3-0-3
			17	17	6
		Senior Year			
MEE	406L	Mechanical Engineering Lab		0-6-2	
MEE	407-8	Machine Design	2-3-3	2-3-3	
MEE	410	Heat Transfer	3-0-3		
MEE	412L	Fuel & Lubricant Analysis Lab	0-3-1		
MEE	414	Seminar	1-0-0	1-0-1	
MEE	417	Thermal Engineering	3-0-3		
MEE	418	Advanced Fluid Mechanics	3-0-3		
MEE	419	Mechanical Engineering Analysis	2-0-2		
MEE	423	Heating, Air Conditioning, and Refrigeration		3-0-3	
——[8]	—	Mechanical Engineering Elective		6-0-6	
			15	15	

[1] Under "Term," 3-0-3 means 3 hrs. class, 0 hrs. laboratory, and 3 hrs. credit.
[2] Women take Phe 210-1.
[3] Non-Catholics take Phl 306.
[4] Non-Catholics take Phl 402.
[5] Non-Catholics take Phl 403.
[6] Non-Catholics take Phl 404.
[7] Non-Catholics take approved Humanistic-Social Studies electives.
[8] Mechanical Engineering Electives: Mee 416, Mee 416L, Mee 421, Mee 431, Mee 499, Mth 342, Phy 311, Phy 321.