

## Associate of Engineering Science Degree Requirements

## **Effective Summer 2016**

Engineering programs are highly structured to meet the Accreditation Board for Engineering and Technology (A.B.E.T.) standards required for registration as a professional engineer. To transfer as a junior, the Prerequisite Required courses listed must be complete.

Engineering students that will not be able to complete the necessary Prerequisite courses for the Associate of Engineering Science degree are encouraged to pursue an Associate of Science degree while completing as many suitable Prerequisites and Engineering Specialty courses as possible.

Some Physics and Chemistry students immediately ready for the Calculus sequence may find the Associate of Engineering Science degree matches the first two years of their baccalaureate program as well as or better than the Associate of Science degree.

Students are encouraged to complete the entire course sequence in Physics (I, II, III), Chemistry (I, II) and Computer Science (I, II) before transfer, since topics are covered in different orders by different schools. Verify with the transfer institution that these required Science courses are sufficient as Prerequisites. Additional sequential courses or credit hours may also transfer for Technical elective credits.

## Communications

#### **6 Semester Hours**

All courses are 3 credit hours ENGL 121 Rhetoric and Composition I\* ENGL 122 Rhetoric and Composition II\* \* A grade of "C" or better is required.

## Humanities and Fine Arts & Social and Behavioral Sciences 12 Semester Hours

- One course must be chosen from Humanities & Fine Arts.
- One course must be chosen from the Social and Behavioral Sciences.
- 12 credit hours must be general education credits (IAI GECC) from the lists below.
- If two courses are selected in a field, a two-semester sequence in the same discipline is recommended.
- It is encouraged to select one course in either the Humanities and Fine Arts or the Social and Behavioral Sciences that emphasizes non-Western cultures or minority cultures within the United States.
- ECON 112 Principles of Economics II is required for Industrial Engineering and recommended for other Engineering specialties.
- All courses are 3 credit hours.

## Humanities

ENGI	223	Introduction to Fiction
ENGL	224	Introduction to Poetry
ENGL	225	American Literature I
ENGL	226	American Literature II
ENGL	227	British Literature I
ENGL	228	British Literature II
ENGL	229	Introduction to Shakespeare
ENGL	230	Women in Literature
HUMA	104	Introduction to Humanities
HUMA	110	Introduction to Critical Thinking
PHIL	180	Survey of World Religions
PHIL	281	Introduction to Philosophy
PHIL	282	Ethics

## **Fine Arts**

ART	110	Introduction to Art
ART	215	Art History I
ART	216	Art History II
ART	219	Modern Art
мсом	150	Introduction to Film
мсом	205	Film History and Appreciation
MUS	267	Introduction to Music
MUS	268	Introduction to Music of the USA
THEA	196	Introduction to Theatre

#### Social and Behavioral Sciences

ECON	111	Principles of Economics I
ECON	112	Principles of Economics II
GEOG	132	Regional Geography of the World
GEOG	233	Economic Geography
HIST	141	Western Civilization to 1648
HIST	142	Western Civilization 1648 to Present
HIST	143	U. S. History I
HIST	144	U. S. History II
HIST	243	History of Africa I
HIST	244	History of Africa II
HIST	245	History of the Middle East
POL	151	Introduction to Political Science
POL	152	American Government & Politics
POL	153	State and Local Government
POL	253	International Relations
POL	254	Introduction to Comparative Government
PSY	161	Introduction to Psychology
PSY	162	Child Psychology
PSY	262	Human Growth & Development
PSY	264	Social Psychology
SOCI	171	Introduction to the Principles of Sociology
SOCI	177	Introduction to Anthropology
SOCI	271	Social Problems
SOCI	274	The Family
SOCI	276	Racism & Diversity in Contemporary Society
Communications		

SPCH 191 Fundamentals of Speech Communication

# HIGHLAND COMMUNITY COLLEGE



## Science, Technology, Engineering & Mathematics Prerequisites and Specialty Courses

## **44** Semester Hours

## **Prerequisite Courses**

## **35 Semester Hours**

#### **Required Mathematics**

MATH 168 Analytic Geometry & Calculus I (5) MATH 268 Analytic Geometry & Calculus II (5) Analytic Geometry & Calculus III (4) MATH 269 MATH 265 Differential Equations (3)

#### **Required Science**

	122	Conorol Collago Chamistry ( (E)
CHEIM	123	General College Chernistry I (5)
INFT	190	Principles of Computer Science I (3)
PHYS	143	General Physics I (5)
PHYS	144	General Physics II (5)

## **Engineering Specialty Courses**

#### 9 Semester Hours

Students should decide on an Engineering specialty and preferred transfer school by the beginning of the sophomore year since course requirements vary by specialty and by school.

Be sure to select your courses in consultation with an Engineering advisor at Highland and with an Engineering advisor at the transfer school if possible. Consultation with Engineering, Math, and Science faculty at Highland is also recommended.

Some programs have a Life Science general education requirement or have specific Life Science course requirements. Check transfer school for details.

#### **Engineering Specialty Course List**

- CHEM 124 General College Chemistry II (5)
- CHEM 221 Organic Chemistry I (4)
- CHEM 222 Organic Chemistry II (4)
- DRAF 151 Engineering Graphics (4)
- GEOG 126 Geology (4)
- INFT 290 Principles of Comp.Sci. II/Data Structures (3)
- MATH 270 Linear Algebra (3)
- PHYS 120 Introduction to Engineering (2)
- 145 General Physics III (3) PHYS
- 221 PHYS Statics (3)
- PHYS 222 Dynamics (3)
- PHYS 246 Introduction to Circuit Analysis (4)

## **Chemical Engineering**

- CHEM 124 General College Chemistry II (5)
- CHEM 221 Organic Chemistry I (4)
- CHEM 222 Organic Chemistry II (4)
- MATH 270 Linear Algebra (3)
- 246 Introduction to Circuit Analysis (4) PHYS

## **Civil and Environmental Engineering**

PHYS	221	Statics (3)
PHYS	222	Dynamics (3)
CHEM	124	General College Chemistry II (5)
MATH	270	Linear Algebra (3)
PHYS	246	Introduction to Circuit Analysis (4)

## **Computer Engineering**

290	Principles of Comp.Sci. II/Data Structures (3)
145	General Physics III (3)
246	Introduction to Circuit Analysis (4)
270	Linear Algebra (3)
124	General College Chemistry II (5)
	290 145 246 270 124

#### Electrical Engineering

PHYS	145	General Physics III (3)
PHYS	246	Introduction to Circuit Analysis (4)
MATH	270	Linear Algebra (3)
CHEM	124	General College Chemistry II (5)
INFT	290	Principles of Comp.Sci. II/Data Structures (3)

#### Industrial Engineering

PHYS	221	Statics (3)
PHYS	222	Dynamics (3)
PHYS	246	Introduction to Circuit Analysis (4)
MATH	270	Linear Algebra (3)
INFT	290	Principles of Comp.Sci. II/Data Structures (3)

#### Mechanical Engineering (Aeronautical & Manufacturing)

PHYS	221	Statics (3)
PHYS	222	Dynamics (3)
PHYS	246	Introduction to Circuit Analysis (4)
MATH	270	Linear Algebra (3)
CHEM	124	General College Chemistry II (5)

Other Engineering Specialties (Examples Include: Agricultural, Biological, Material Sciences, Mining, Nuclear). See transfer institutions for guidance with appropriate choice of Engineering Specialty courses.

## **MINIMUM HOURS FOR DEGREE:**

#### **67 Semester Hours**

- Completion of the Associate in Engineering Science (A.E.S.) degree does not fulfill the requirements of the Illinois Transferable General Education Core Curriculum (IAI GECC). Completion of the general education requirements of the transfer school may be necessary.
- · A total of 67 semester hours is required (68 recommended) for the Associate of Engineering Science degree.
- · Courses labeled "T" in the college catalog are the most transferable. A grade of C or better may be required for physics, chemistry, mathematics, and engineering courses to transfer. A similar policy may exist for general education courses.
- Please see your advisor when choosing electives.





61