PRE-ENGINEERING

SCIENCE (AS) DEGREE
PRE-ENGINEERING CONCENTRATION

For students considering a major in PRE-ENGINEERING upon transferring to a four-year institution, the Associate of Science degree with a PRE-ENGINEERING concentration from ACC provides a strong foundation, offering essential courses that serve as building blocks for advanced study.

A concentration in PRE-ENGINEERING can lead to diverse career opportunities, including civil, mechanical, electrical, chemical, aerospace, environmental, and biomedical engineering, among others.

Program Objectives

Upon graduating from ACC with an Associate of Science degree with a concentration in PRE-ENGINEERING, students will:

1. **Acquire** a solid foundation in mathematics and physical sciences applicable to engineering.
2. **Apply** critical problem-solving and communication skills related to engineering.

It is strongly recommended that students consult with an ACC Academic Advisor in PRE-ENGINEERING to ensure they meet specific program requirements, objectives, and transfer goals.

PROGRAM REQUIREMENTS (PR)

CEM 111 *OR* **CEM 121**	**CEM 111 GENERAL CHEMISTRY (4/7) OR CEM 121 GENERAL AND INORGANIC CHEM (4/7) - CONSULT TRANSFER INSTITUTION**
MTH 131	**ANALYTICAL GEOMETRY & CALCULUS I (5/5)**
MTH 132	**ANALYTIC GEOMETRY & CALCULUS II (5/5)**
MTH 231	**ANALYTIC GEOMETRY & CALCULUS III (5/5)**
MTH 232	**DIFFERENTIAL EQUATIONS (4/4)**
PHY 221	**PHYSICS (5/7)**
PHY 222	**PHYSICS (5/7)**

GENERAL EDUCATION
DEGREE DISTRIBUTION REQUIREMENTS

GROUP 1 (G1) – ENGLISH COMPOSITION

Six (6) semester credits required, including ENG 111 or 121 and 112, 122 or 123

GROUP 2 (G2) – SCIENCES/MATHEMATICS

Twenty (20) semester credits are required, including at least one laboratory science course. Courses will be taken in more than one academic discipline (course abbreviation/prefix). Note: Two (2) courses in Natural Sciences, including one with laboratory experience (from two disciplines), in addition to MTH 118 or MTH 121 or higher, are required to achieve the Michigan Transfer Agreement (MTA).

GROUP 3 (G3) – SOCIAL SCIENCES & HUMANITIES/FINE ARTS

Ten (10) semester credits are required in combination from both of these groups, with a minimum of three (3) credits from each group. Political Science or U.S. History courses used to satisfy the American Government requirement can be included. Courses will be taken in more than one academic discipline (course abbreviation/prefix). Note: Two (2) courses in Social Sciences (from two disciplines) and two (2) courses in Humanities and Fine Arts (from two disciplines and excluding studio and performance classes) are required for the Michigan Transfer Agreement (MTA).

ELECTIVE CREDITS (EC)

The remainder of credits for an AS degree with this concentration should be oriented toward additional courses in PRE-ENGINEERING with prefixes **CEM, MTH, PHY,** and **EGR** when available in consultation with an ACC Academic Advisor in PRE-ENGINEERING. Other courses include prefixes **ECN, GEO**, and **PHL**.

SUGGESTED ELECTIVES

CAD 150	3D MODELING (3/4)
CEM 122	INORGANIC CHEM & QUALITATIVE ANALYSIS (4/7) (DEPENDS ON CHOSEN ENGINEERING CAREER)
CEM 221	ORGANIC CHEMISTRY (5/7) - DEPENDS ON CHOSEN ENGINEERING CAREER
CEM 222	ORGANIC CHEMISTRY (5/7) - DEPENDS ON CHOSEN ENGINEERING CAREER
ECN 231	ECONOMICS (MICRO) (3/3) *or* ECN 232 ECONOMICS (MACRO) (3/3)
EGR 122	INTRODUCTION TO ENGINEERING (1/1)
EGR 290	ENGINEERING INTERNSHIP (1/1)
GEO 151	INTRODUCTION TO GIS (1.5/2)
GEO 152	ADVANCED GIS (1.5/2)
MTH 221	C++ PROGRAMMING (4/5)
MTH 223	Statistical Methods (4/4) - DEPENDS ON TRANSFER PROGRAM
PHL 125	LANGUAGE & REASON (3/3)
PHL 228	INTRODUCTION TO ETHICS (3/3)

RECOMMENDED COURSES - SEQUENCE
GROUP 1-4 REQUIREMENTS + ELECTIVE CREDITS

Meets ACC degree distribution and MTA requirements
61 CREDITS - 69 CONTACT HOURS

YEAR 1 FALL	15 CREDITS	
G1	ENG 111	ENGLISH COMPOSITION I (3/3)
G2 PR	**MTH 131**	**ANAL GEOMETRY & CALCULUS I (5/5)**
G2 PR	**CEM 111**	**GENERAL CHEMISTRY (4/7) OR CEM 121 GENERAL AND INORGANIC CHEMISTRY (4/7) - CONSULT TRANSFER INSTITUTION**
G3	SOC SCI	SOCIAL SCIENCE (3/3)

YEAR 1 SPRING	15 CREDITS	
G1	ENG 112	ENGLISH COMPOSITION II (3/3)
G2 PR	**MTH 132**	**ANAL GEOMETRY & CALCULUS II (5/5)**
G2	MTH 221	C++ PROGRAMMING (4/5) – DEPENDS ON CHOSEN ENGINEERING CAREER
G3	HUM/FA	HUMANITIES/FINE ARTS (3/3)

YEAR 2 FALL	16 CREDITS	
G2 PR	**MTH 231**	**ANAL GEOMETRY & CALCULUS III (5/5)**
G2 PR	**PHY 221**	**PHYSICS (5/7)**
G3	PLS 221	AMERICAN GOVERNMENT & POLITICS (3/3)
EC	ELECTIVE	GENERAL ELECTIVE (3/3)

YEAR 2 SPRING	15 CREDITS	
G2 PR	**MTH 232**	**DIFFERENTIAL EQUATIONS (4/4)**
G2 PR	**PHY 222**	**PHYSICS (5/7)**
G2	EGR 221	STATICS (3/3) - DEPENDS ON CHOSEN ENGINEERING CAREER
G3	HUM/FA	HUMANITIES/FINE ARTS (3/3)