



# **1. Academic Support Department**

## **1.1 Introduction**

The Academic Support Department (ASD) was established since the beginning of 2011 and has been developed to meet ADPoly's mission of providing high quality academic support services and general education curriculum that solidifies students' knowledge and skills to enhance their academic performance in Applied Science and Engineering Technology in alignment with Abu Dhabi Economic Vision 2030.

## **1.2 Department Mission**

The mission of the Academic Support Department is to provide high quality academic support services and tutoring that solidify knowledge, skills and enhance academic performance for science and engineering technology students at ADPoly. The ASD is committed to support students to achieve institutional educational goals and become a life-long-learners through offering variety of academic services, tutoring and learning resources.

## **1.3 General Education**

The General Education Curriculum (GEC) is offered by ASD as a main role of the department. The GEC is offered in six main clusters: natural sciences (physics and chemistry), mathematics (precalculus, calculus and advance mathematics), fundamentals in engineering technology, humanities, English and technical communication skills, and skills for life (see figure 1). The GEC was developed based on the following parameters: program needs offered at ADPoly, Academic Accreditation Commission (CAA) standards, ABET standards, and national and international institutions' (i.e., other polytechnics) curriculum benchmarking. The general education courses are offered on a credit-hour system and they are divided into general education requirements and program-based general education courses.

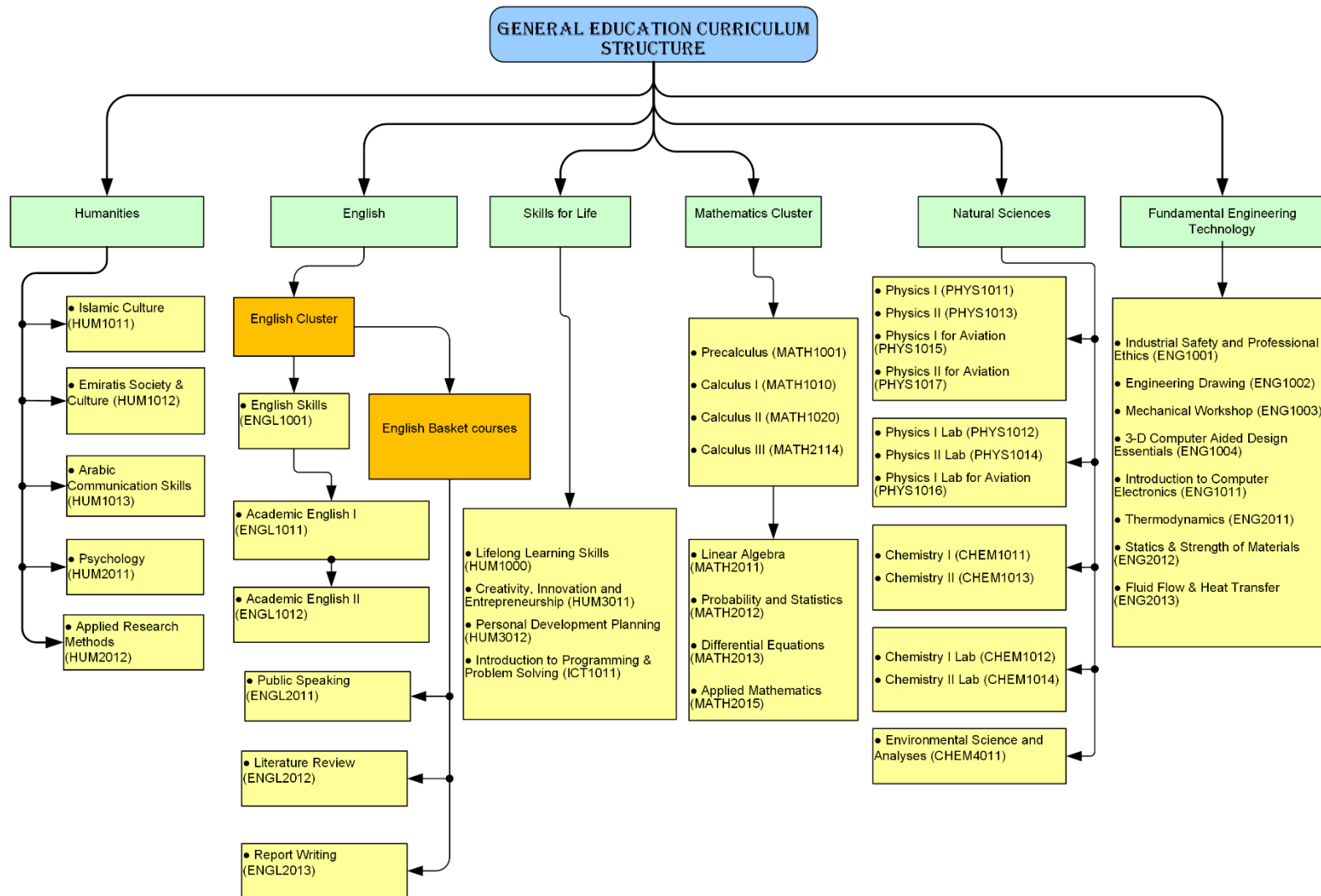
## **1.4 Philosophy of General Education at Abu Dhabi Polytechnic**

A top priority of Abu Dhabi Polytechnic is to make sure that undergraduate students receive a diverse and robust general education since enrollment to graduation. In the era of the Industrial Revolution 4.0 with increasing demands on professional expertise, general education plays a vital role in preparing graduates who can maneuver technological advancements as they occur.

The General Education program ensures that all undergraduate students, regardless of their academic major, receive a broad education entrenched in natural sciences, mathematics, fundamentals of engineering technology, humanities, communication skills, and innovation and entrepreneurship. It helps students to expand their knowledge and professional perception while studying Arabic language and Islamic culture, developing their Emirati national identity, learning how to be better communicators in English and striving for life-long self-efficacy.

The general education curriculum recognizes prior learning through a well-defined articulation plan for different high-school systems. Students can waive one or more semesters upon joining Abu Dhabi Polytechnic. Furthermore, the general education curriculum has been benched marked with national and international polytechnic and applied higher education institutions' curricula. Studying at Abu Dhabi Polytechnic gives students opportunities for transfer from other institutions, degree bridging, exchange programs, and continuation of their graduate studies. The general education curriculum meets institutional needs as well as those of accreditation bodies.

The general education represents a bedrock upon which detailed major-specific information is built. Students with a well-rounded general education are better informed and more likely to engage in meaningful activities to improve their own well-being as well as become positive contributors within their communities, professions, and country.



**Figure 1: General Education Curriculum clusters**



## 1.5 Program Educational Objectives (PEOs)

General education program is intended to provide the undergraduate curriculum with critical thinking skills; a broad understanding of the approaches to knowledge in humanities and social sciences, a common core of understanding among students in Islamic and multicultural studies, and a level of skill appropriate to higher education in science, mathematics, information literacy, the application of technology and communications silks.

These objectives are as follows:

- PEO1:** Provide students with knowledge and skill in science, mathematics, fundamentals of engineering technology, information literacy, and communication that will help them succeed in their studies, lives and careers.
- PEO2:** Provide students with critical thinking skills that promoting innovation, creativity and entrepreneurship.
- PEO3:** Provide students with a common core of understanding such as in Islamic culture and studies that enhancing their awareness of their role as a responsible citizens of UAE, who know and value their religion and culture, and also appreciate and participate in the multicultural diversity of the modern world.
- PEO4:** Create learning environment that produce competency in the use of resources and in research methodologies to promote life-long learning.
- PEO5:** Provide students with teamwork and leadership experiences while demonstrating effective communication skills and knowledge that will help them successfully guide the economic, social and cultural development of the UAE.

## 1.6 Program Learning Outcomes (PLOs)

The following list summarizes the Program Learning Outcomes for general education courses which are similar to ABET Student Outcomes 1-5 for engineering technology.

- PLO1:** an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
- PLO2:** an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
- PLO3:** an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
- PLO4:** an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and
- PLO5:** an ability to function effectively as a member as well as a leader on technical teams.



## 1.7 General Education Curriculum

The general education curriculum is divided in two main components:

1. General education requirements to be adhered to all areas of academic study (Table 1)
2. Program-based general education courses (Table 2)

**Table 1.** General education requirements to be adhered to all academic programs

General Education Requirements			28 Credit Hours	
Course Code	Course Title	Prerequisite(s)	Co-requisite	Credit Hours
MATH1001	Precalculus			3
MATH1010 <sup>a</sup>	Calculus I	MATH1001		3
ICT1011	Introduction to Programming & Problem Solving			3
ENGL1001 <sup>b</sup>	English Skills			0
ENGL1011 <sup>b</sup>	Academic English I			3
ENGL1012 <sup>b</sup>	Academic English II	ENGL1011		3
ENGL2011 <sup>b</sup>	Public Speaking	ENGL1012		1
ENGL2012 <sup>b</sup>	Literature Review	ENGL1012		1
ENGL2013 <sup>b</sup>	Report Writing	ENGL1012		1
HUM1011 <sup>c</sup>	Islamic Culture			3
HUM1012 <sup>c</sup>	Emirates Society & Culture			3
HUM1013 <sup>c</sup>	Arabic Communication Skills			3
HUM3011	Creativity, Innovation and Entrepreneurship	ENGL2013		3

<sup>a</sup> Calculus I course is compulsory for all bachelor's degree programs and optional for Diploma/Higher Diploma

<sup>b</sup> Nine credits of English are still required for all programs; however, incoming students must take those listed in the table and continuing students should consult with their advisors for the appropriate English courses.

<sup>c</sup> Student should take two out of three courses (HUM1011, HUM1012 and HUM1013)



**Table 2.** Program-based general education courses

Program-based General Education Courses (depending on program study plan)				80 Credit Hours
Course Code	Course Title	Prerequisite(s)	Co-requisite	Credit Hours
PHYS1011	Physics I		MATH1001	3
PHYS1012	Physics I Lab		PHYS1011	1
PHYS1013	Physics II	PHYS1011, MATH1001		3
PHYS1014	Physics II Lab		PHYS1013	1
PHYS1015	Physics I for Aviation			3
PHYS1016	Physics I Lab for Aviation		PHYS1015	1
PHYS1017	Physics II for Aviation	PHYS1015; MATH1001		3
CHEM1011	Chemistry I			3
CHEM1012	Chemistry I Lab		CHEM1011	1
CHEM1013	Chemistry II	CHEM1011		3
CHEM1014	Chemistry II Lab		CHEM1013	1
CHEM4011	Environmental Science and Analyses	CHEM1011		3
MATH1020	Calculus II	MATH1010		3
MATH2011	Linear Algebra	MATH1001		3
MATH2012	Probability and statistics	MATH1010		3
MATH2013	Differential Equations	MATH1020		3
MATH2114	Calculus III	MATH1020		3
ENG1002	Engineering Drawing			2
ENG1001	Industrial Safety and Professional Ethics			2
ENG1003	Mechanical Workshop			1
ENG1011	Introduction to Computer Electronics	ICT1011		3
ENG2011	Thermodynamics	MATH1010, PHYS1011, CHEM1013		3
ENG2012	Statics & Strength of Materials	MATH1001, PHYS1011		3
ENG2013	Fluid Flow & Heat Transfer	ENG2011, MATH1010		3
HUM1000	Lifelong Learning Skills			3



HYM2012	Applied Research and Development Skills			3
HUM401	Leadership Skills			3
HUM3012	Personal Development Planning			2
HUM3013	Applied Research Methods			3

### 1.8 Preparatory Program (Conditional Admission):

Students who are not meeting the admission criteria for Applied Bachelor can attend the preparatory program for one semester only upon their conditional admission. Candidates who are given a conditional admission to ADPOLY because of their low performance in the EmSAT will be able to participate in the preparatory program at the beginning of semester 1 or semester 2 in each academic year. It is a full-time program which consists of 4 courses (MATH, PHYSICS, CHEMISTRY and ICT) that are given to the students as separate courses throughout the corresponding semester. The courses are zero credit and have the following codes in the banner system in ADPOLY:

**Table 3.** Preparatory courses (zero-credit)

Preparatory Program Courses				0 Credit Hours
Course Code	Course Title	Prerequisite(s)	Co-requisite	Credit Hours
MATH1000	Preparatory Mathematics	EmSAT 800- <1100		0
PHYS1000	Preparatory Physics	EmSAT 700- <1100		0
CHEM1000	Preparatory Chemistry	EmSAT 700- <1100		0
ICT1000	Preparatory Information Computer Technology	EmSAT 700- <1100		0



### 1.9 Proposed Study Plan for all Programs (GRs Plan)

There are several general education courses proposed for freshman year (year 1). This general plan will vary from one program to another; students should refer to the study plan provided by their program.

The freshman plan is designed for students who admitted ADPoly and meeting the EmSAT requirements. Otherwise, student should attend the preparatory program based on their performance in EmSAT and can be registered maximum in 4 courses including the zero-credit courses. They have the chance for one semester to either pass the zero-credit courses or obtain the required EmSAT score for Math and two of the other natural science or ICT courses.

1 <sup>st</sup> Year (Freshman)				
Semester 1	Course Code	Course Title	Credit Hours	Prerequisite(s)
	MATH1001	Precalculus	3	
	ENGL1011	Academic English I	3	IELTS =5.5 or EmSAT=1300 or ENGL1001
	ICT1011	Introduction to Programming & Problem Solving	3	
	HUM1011	Islamic Culture	3	
	ENG1001	Industrial Safety & Prof. Ethics	2	
Total Credit Hours			14	
Semester 2	Course Code	Course Title	Credit Hours	Prerequisite(s)
	CHEM1011	Chemistry I	3	
	CHEM1012	Chemistry Lab I	1	
	PHYS1011	Physics I	3	
	PHYS1012	Physics I Lab	1	
	MATH1010	Calculus I	3	MATH1001, EmSAT=1500
	ENGL1012	Academic English II	3	ENGL1011
	ENG1003	Mechanical Workshop	1	
Total Credit Hours			15	
Summer	Course Code	Course Title	Credit Hours	Prerequisite(s)
	PHYS1013	Physics II	3	PHYS1011
	PHYS1014	Physics II Lab	1	PHYS1012
	ENGL2011	Public Speaking	1	ENGL1012
MATH1020	Calculus II	3	MATH1010	
Total Credit Hours			8	