

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY (KNUST), KUMASI

CoE, FMCE

Department of Mechanical Engineering

BSc Aerospace Engineering



Brochure 2021

1. Brief Description

The BSc Aerospace Engineering programme is designed primarily to meet the engineering needs of airlines and aero spacecraft companies operating across Africa. Graduates may be employed by government ministries/departments, power generation and distribution companies, mining companies, engineering and technology departments of universities and polytechnics, consultancy and expert services.

2. Aims and Objective

The goal of this programme is to produce world-class aerospace engineering graduates with scientific knowledge as well as technical skills tenable them work in existing aircraft related and spacecraft companies operating in Africa or start their own companies in the aviation industry. On successful completion of the programme, the graduate shall be able to

- Design, manufacture and assemble spacecraft, mechanical components and systems,
- Solve engineering problems by analysis and empirical methods, including application of the computer,
- Install, commission, operate, maintain and service spacecraft, machinery, tools and equipment,
- Prepare and read engineering drawings,
- Prepare and present engineering reports, and
- Apply relevant social science principles to manage engineering organisations and maintain cordial human relations.

3. Entry Requirement

- WASSCE/SSSCE applicants should have credits in Elective Mathematics, Elective Physics and any one of the following
 - Chemistry
 - Metalwork
 - Auto Mechanics
 - Applied Electricity
 - Technical and Engineering Science
- WASSCE/SSSCE applicants without Chemistry should at least **B3** in Integrated Science.
- Mature applicants must be twenty-five (25) years or more at the time of submitting the application.
- Mature applicants must have a minimum of three (3) years relevant working experience at the time of submitting the application.
- Mature applicants must possess WASSCE/SSSCE, A' Level Certificate or an HND from a recognized institution.
- International Baccalaureate applicants may be admitted if the contents of such programmes are found to be equivalent to the WASSCE/SSSCE programme or the A' Level programme.

4. Course Structure

Note: Course codes ending with odd digits are 1st-semester courses while codes ending with even digits are 2nd-semester courses.

Year One Semester One

SN	Course Code	Course Title	Credit
1	MATH 151	Algebra	4
2	ENGL 157	Communication Skills I	2
3	EE 151	Applied Electricity	3
4	CE 155	Environmental Studies	2
5	ME 159	Technical Drawing	3
6	AERO 157	Introduction to Aviation Technology	2
7	ME 157	Introduction to Information Technology	2

Year One Semester Two

SN	Course Code	Course Title	Credit
1	MATH 152	Calculus with Analysis	4
2	ENGL 158	Communication Skills II	2
3	EE 152	Basic Electronics	3
4	ME 158	Engineering Graphics	3
5	ME 164	Statics of Solid Mechanics	2
6	ME 158	Computer Programming for Engineers	2
7	AERO 174	Aerospace Design Project I	2

Year Two Semester One

S	Course Code	Course Title	Credit
1	MATH 251	Differential Equations	4
2	ENGL 263	Literature in English I	1
3	ME 261	Dynamics of Solid Mechanics	2
4	ME 251	Introduction to Fluid Mechanics	2
5	ME 281	Engineering Materials I	2
6	ME 255	Strength of Materials I	3
7	AERO 293	Aerospace Industrial Internship I	2
8	ME 295	Mechanical Engineering Laboratory I	1

Year Two Semester Two

SN	Course Code	Course Title	Credit
1	MATH 252	Calculus with Several Variables	4
2	ENGL 264	Literature in English II	1
3	ME 258	Computer-Aided Design and Modelling	3
4	ME 262	Mechanisms Synthesis and Analysis I	3
5	AERO 256	Aerospace Structures	3
6	ME 266	Thermodynamics I	2
7	AERO 274	Aerospace Design Project II	2

Year Three Semester One

SN	Course Code	Course Title	Credit
1	MATH 353	Probability and Statistics	2
2	MATH 351	Numerical Methods	2
3	ME 363	Automatic Control I	2
4	AERO 395	Aerospace Engineering Laboratory I	1
5	AERO 391	Aerospace Industry and Engineering	3
6	AERO 351	Aerodynamics I	3
7	AERO 393	Aerospace Industrial Internship II	2
8	*****	Non-Technical Elective	2

Recommended Non-Technical Electives for Year Three Semester One

SN	Course Code	Course Title	Credit
1	MUS 153	Keyboard Skills I	2
2	MUS 159	Introduction to Sound Engineering	2
3	PAA 151	Traditional African Dance & Danceforms	2
4	PES 125	Jogging and Fitness	2
5	ECON 151	Introduction to Economics I	2

Year Three Semester Two

SN	Course Code	Course Title	Credit
1	AERO 362	Air Vehicle Stability and Control	3
2	ME 392	Industrial Engineering and Ergonomics	2
3	AERO 374	Aircraft Performance and Design	3
4	AERO 368	Propulsion	3
5	ME 366	Heat Transfer	3
6	ME 362	Vibrations I	3
7	AERO 396	Aerospace Engineering Laboratory II	1

Year Four Semester One – Core Courses

SN	Course Code	Course Title	Credit
1	AERO 483	Avionics	3
2	AERO 491	Aviation Business Management	2
3	AERO 497	Final Year Project I	3
4	AERO 495	Aircraft Maintenance Engineering	2
5	AERO 473	Aerospace Vehicle Design	4
6	AERO 493	Aerospace Industrial Internship III	2
7	****	Technical Elective I	2

Year Four Semester One – Technical Elective Courses

SN	Course Code	Course Title	Credit
1	ME 461	Vibrations II	3
2	ME 463	Automatic Control II	3
3	ME 483	Mechatronics	3
4	MSE 451	Composite Materials	3
5	ME 473	Computer Aided Design and Manufacturing	3
6	ME 469	Facilities Design	3
7	ME 499	Operations Research	3
8	ME 451	Behaviour of Real Fluids	3
9	ME 455	Strength of Materials III	3

Year Four Semester Two – Core Courses

SN	Course Code	Course Title	Credit
1	ME 492	Entrepreneurship Development and Management	2
2	AERO 452	Aerodynamics II	2
3	AERO 498	Final Year Project II	5
4	AERO 456	Applied Meteorology	2
5	AERO 492	Aerospace Safety and Air Security	2
6	**** **	Technical Elective II	3

Year Four Semester Two – Technical Elective Course

SN	Course Code	Course Title	Credit
1	ME 462	Mechanisms Synthesis and Analysis II	3
2	ME 456	Finite Element Methods	3
3	ME 468	Internal Combustion Engines	3
4	ME 474	Production Planning and Control	3
5	ME 472	Machine Shop and Factory Design	3
6	ME 494	Human Factors and Ergonomics	3

5. Graduation Requirement

To graduate, the student must pass all required courses, done a minimum of 21 weeks supervised industrial work, obtain a minimum of 142 credit hours and CWA of 45%.

Associations

Aerospace Engineering Student Association (AESA)

Research Centre and laboratories

1. Brew Hammond Energy Centre
2. Mechanical Engineering Laboratories
3. Bioenergy Laboratory

Phone Number: 03220 60232

Mobile Number: 0208155130

Email: mecheng@knust.edu.gh

Website: mecheng.knust.edu.gh

HoD: Prof. Albert K. Sunnu