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

CoE, FMCE

Department of Mechanical Engineering

BSc Automobile Engineering

Brochure 2021

1. Brief Description

The programme is designed to give graduates the necessary skill set as general Automobile Engineer to meet the rapid changing automobile industry. Graduates of this programme would have job opportunities in educational institutions, automobile industries, mining Industries, governmental institutions, military and other security agencies.

2. Aims and Objective

The aim of the BSc. Automobile Engineering programme is to provide broad-based education and practical training in automobile engineering sciences and their relevant applications that will enable graduates meet challenges in the automobile and other related industries. On successful completion of the programme, the graduate shall be able to

a) Troubleshoot and solve general and automobile engineering problems using appropriate tools;
b) Design all manner of vehicles to meet set of constraints;
c) Design and fabricate simple mechanical elements and systems;
d) Assemble components and systems of various vehicles, including light, heavy duty, on- and off-road and special vehicles;
e) Work with other engineers and other professionals to solve engineering and other related challenges. This may include leading or supporting design of under-sized vehicle, oversized vehicle, a mobile multi-purpose machine such as mining, agricultural, medical, military and other security, firefighting and construction machines.
f) Install, commission, operate, maintain and service vehicles, plant, machinery, tools and equipment;

3. Entry Requirement

1. WASSCE/SSSCE applicants should have credits in Elective Mathematics, Elective Physics and any one of the following
   i. Chemistry
   ii. Metalwork
   iii. Auto Mechanics
   iv. Applied Electricity
   v. Technical and Engineering Science
2. WASSCE/SSSCE applicants without Chemistry should at least **B3** in Integrated Science.
3. Mature applicants must be twenty-five (25) years or more at the time of submitting the application, must have a minimum of three (3) years relevant working experience at the time of submitting the application and must possess WASSCE/SSSCE or A' Level Certificate from a recognized institution.
4. HND Certificate applicants shall have at least Second Class Honour in any Mechanical Engineering orientated programme, such as:
   a. Mechanical Engineering with any option
   b. Agricultural Mechanization
   c. Automobile Engineering
5. 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	ME 168	Computer Programming for Engineers	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 160	Engineering Drawing	3
5	ME 164	Statics	2
6	ME 266	Basic Thermodynamics	2
7	ME 172	Measurement and Instrumentation	2

Year Two Semester One

SN	Course Code	Course Title	Credit
1	MATH 251	Differential Equations	4
2	ME 291	Technical Report Writing and Presentation	2
3	ME 261	Dynamics	2
4	ME 251	Introduction to Fluid Mechanics	2
5	ME 281	Engineering Materials	2
6	ME 255	Strength of Materials I	3
7	ME 259	Applications of Computer Graphics	3
8	AME 295	Automobile Engineering Laboratory I	1
9	CENG 291	Engineering in Society	2

Year Two Semester Two

SN	Course Code	Course Title	Credit
1	MATH 252	Calculus with Several Variables	4
2	ME 284	Automotive Electrical Systems and Electronics	2
3	ME 270	Manufacturing Technology	3
4	ME 264	Mechanisms Synthesis and Analysis I	3
5	AME 252	Fluid Mechanics	2
6	AME 274	Design of Auto Machine Elements	3
7	AME 296	Automobile Engineering Laboratory II	1
8	AME 272	Automobile Engineering Vacation Training I	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	AME 373	Design of Auto Mechanical Systems	3
4	ME 361	Dynamics of Machinery	3
5	AME 365	Heat Transfer and Combustion	3
6	AME 371	Land Vehicle Design	2
7	AME 381	Automotive Workshop Practice I	2
8	AME 395	Automobile Engineering Laboratory III	1

Year Three Semester Two

SN	Course Code	Course Title	Credit
1	ME 392	Industrial Engineering and Ergonomics	2
2	AME 362	Vibrations for Automobile Engineers	2
3	ME 384	Microprocessors and Mechatronics Applications	3
4	AME 376	Automotive Chassis	3
5	AME 386	Manual Power Train	2
6	AME 356	Land Vehicle Structures	3
7	AME 368	Automotive Spark-Ignition Engines	2
8	AME 396	Automobile Engineering Laboratory IV	1
9	AME 372	Automobile Engineering Vacation Training II	2

Year Four Semester One – Core Courses

SN	Course Code	Course Title	Credit
1	ME 453	Hydraulics and Pneumatics	3
2	ME 491	Engineering Economy and Management	2
3	AME 497	Final Year Project I	3
4	AME 467	Automotive Compression-Ignition Engines	2
5	AME 485	Automatic Power Train	4
6	AME 481	Automotive Workshop Practice II	2
7	*** ***	Technical Elective I	2

Year Four Semester One – Technical Elective Courses

Each student shall select any course from the courses listed below or any course from Mechanical Engineering, Aerospace Engineering, Computer Engineering and Materials Engineering programmes.

SN	Course Code	Course Title	Credit
1	AME 483	Off-Road Vehicles	2
2	AME 481	Tractors and Farm Equipment	2
3	AME 455	Vehicle Air-Conditioning and Refrigeration	2

Year Four Semester Two – Core Courses

SN	Course Code	Course Title	Credit
1	ME 492	Entrepreneurship Development and Management	2
2	AME 498	Final Year Project II	5
3	AME 496	Vehicle Maintenance and Use Regulations	2
4	ME 456	Finite Element Methods	3
5	AME 476	Modern Automobile Technology	3
6	*** ***	Technical Elective II	2
7	AME 496	Philosophy for Engineers	2

Year Four Semester Two – Technical Elective Course

SN	Course Code	Course Title	Credit
1	AME 478	Heavy Duty Vehicles	2
2	AME 482	Special Vehicles	2

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%.

Research Centre and laboratories

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

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