



**University/Academy:** Arab Academy for Science, Technology & Maritime Transport  
**Faculty/Institute:** College of Engineering & Technology  
**Program:** B.Sc. Mechanical Engineering

Form no. (12): **Course Specification**

**1- Course Data**

Course Code: <b>ME 585</b>	Course Title: <b>Automotive Power Trains</b>	Academic Year/Level: <b>5th year / 9th semester</b>
Specialization: <b>Mechanical</b>	No. of Instructional Units <b>3 credits</b>	Lecture <b>2 hrs.</b>
		Practical <b>2 hrs.</b>

**2- Course Aim**

- To enable students to understand the power train operation and construction
- To teach students fundamentals of the manual and automatic transmission systems
- To help students acquire the ability to do simple design calculations
- To teach students the basics of the electronic power train

**3- Intended Learning Outcomes**

<b>a- Knowledge and Understanding</b>	<b>Through knowledge and understanding, students will be able to:</b> a.6) Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues. a.7) Business and management principles relevant to engineering. a.p.4) The constraints which mechanical power and energy engineers have to judge to reach at an optimum solution a.a.1) Detailed knowledge and understanding of the themes and specialist subjects of the automotive a.a.2) The requirements, limitation and design processes for power train, undercarriage, braking, chassis, vehicle body, electrical systems and vehicle interior
<b>b- Intellectual Skills</b>	<b>Through intellectual skills, students will be able to:</b>
<b>c- Professional Skills</b>	<b>Through professional and practical skills, students will be able to:</b> c.p.5) Design, operate, repair and maintain fluid hydraulic power systems for diverse applications c.p.7) Work in mechanical power and energy operations, maintenance and overhaul c.a.3) Application of fault diagnosis procedures using the automotive industry special instrumentation to identify production and operation problems
<b>d- General Skills</b>	<b>Through general and transferable skills, students will be able to:</b>

**4- Course Content**

<b>Week No.1</b>	Automotive Clutches
<b>Week No.2</b>	Manual transmission, Transmission construction and operation

<b>Week No.3</b>	Automatic transmissions, principles of automatic transmission and torque converter
<b>Week No.4</b>	Transmission construction and operation -Synchronizing mechanism
<b>Week No.5</b>	Automatic transmissions, principles of automatic transmission and torque converter
<b>Week No.6</b>	automatic transmission, planetary gears operation and construction
<b>Week No.7</b>	7th week examination / 7th week evaluation
<b>Week No.8</b>	automatic transmission hydraulic system transmission
<b>Week No.9</b>	Drive systems, FWD, RWD, four wheel drive, all-wheel drive
<b>Week No.10</b>	Drive lines, Propeller shaft, Universal joints, Automotive differentials
<b>Week No.11</b>	Brake system (disc brake)
<b>Week No.12</b>	12th week exam / 12th week evaluation
<b>Week No.13</b>	Brake system drum brake.
<b>Week No.14</b>	Brake system (ABS, EBS)
<b>Week No.15</b>	Tires
<b>Week No.16</b>	Final Examination

## 5- Teaching and Learning Methods

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

## 6-Teaching and Learning Methods for Students with Special Needs

- Lectures
  - Tutorials
  - Reports & sheets
  - Laboratories
  - Seminars
- Engineering Requirements and Design Considerations in college Buildings and its Leading Passages**
- The design of college buildings and pedestrian passages leading to it are sloppy to allow the transportation of the handicapped;
  - Doors are wide enough to let wheel chairs pass through easily and conveniently.
  - Lifts are provided for movement between floors.
  - Doors are made from light weight materials to make it easy for the handicapped suffering from weakness in limb muscles or those handicapped using prosthetic limbs to deal with them with the least muscular effort.
  - Class floors are made from non-slippery materials to prevent falls on the part of the handicapped.
  - Sudden changes in the floor level are prevented.
- Design Considerations of the Classes**
- Class boards are placed at 60 cm high to allow wheeled chair users or those suffering from limited arm mobility use them.
  - Enough spaces are left between seats and benches to prevent hindering the movement of wheeled chairs between them.
  - Handicapped students sit among normal people in class to be able to interact with them. Nevertheless, in urgent cases according to the nature of the disability, the handicapped students sit in fixed suitable places whether at the front or the back of the class.

- Handicapped students sit close to the main exits of the class to be able to evacuate in case of emergencies.
- Academic Support:**
- The general academic advisor appoints an academic supervisor for handicapped students.
  - Continuous follow ups are made for handicapped students after each assessment to evaluate their academic level of achievement

## 7- Student Assessment

<b>a-Procedures used</b>	1-Written Examinations to assess The Intended Learning Outcomes.	
	2-Class Activities (Reports, Discussions, -----) to assess The Intellectual and general Skills.	
<b>b- Schedule:</b>	Assessment 1	7 <sup>th</sup> Week Assessment
	Assessment 2	12 <sup>th</sup> Week Assessment
	Assessment 3	Continuous Assessments
	Assessment 4	16 <sup>th</sup> Week Final Written Exam
<b>c- Weighing of Assessment</b>	7 <sup>th</sup> Week Evaluation	30 %
	12 <sup>th</sup> Week Evaluation	20 %
	Final-term Examination	40 %
	Oral Examination	00 %
	Practical Examination	00 %
	Semester Work	10 %
	Total	100%

## 8- List of References:

<b>a- Course Notes</b>	N/A
<b>b- Required Books</b> (Textbooks)	• Lecture Notes.
<b>c- Recommended Books</b>	•
<b>d- Periodicals, Web Sites, etc.</b>	N/A

Course Instructor: Dr. Walid Abdel Ghaffar

Head of Department: Prof. El-Sayed Saber

Program Manager: Prof. El-Sayed Saber

**Dean of College of Engineering and Technology of AASTMT**

Name: Prof. Moustafa Hussein Aly

Signature:

**Executive Manager of Quality Assurance Center of AASTMT**

Name: Prof. Aziz Ezzat

Signature:

