R19

VIGNAN'S
(Deemed to be University)

DEPARTMENT OF APPLIED ENGINEERING

Minutes of BoS Meeting

The BoS meeting was conducted for B.Tech Automobile Engineering on 20th April, 2019 in U-Block Fourth floor at AFTF 05.

The Following members are Presented for the meeting:

1. Dr. K. Annamalai ,External member
   Madras Institute Of Technology,
   Anna University, Chennai.

2. Dr. R. Velu., External member
   Professor, School of Mechanical Engineering,
Vel Tech RangarajanDr.Sagunthala R&D Institute of Science and Technology, Avadi, Chennai

3. Mr.K.N. Mohan, External member
Dy.CME, Production, Integral Coach factory, Chennai.

Internal Members are :

1 Mr.B.Harishbabu, member
Asst. Prof , Applied Engineering,Vignan's Foundation for Science, Technology & Research

2. Mr.M. Naresh. member,
Asst. Prof,Applied Engineering,Vignan's Foundation for Science, Technology & Research

3. Mr.N.Narayana Rao, member
Asst.Prof,Applied Engineering, Vignan's Foundation for Science, Technology & Research

4. Ms.Anitha Reddy, member
Asst.Prof,Applied Engineering, Vignan's Foundation for Science, Technology & Research

5. Dr. D Vinay Kumar, member
Assc.Prof, Mechanical, Vignan's Foundation for Science, Technology & Research

6. Dr. D Stayanarayana, Member
Professor, Vignan's Foundation for Science, Technology & Research

7. Dr. Dr. K Venkat Rao, Member
Professor, Vignan's Foundation for Science, Technology & Research

III. The following views which approved by the external members

- As per the suggestions given by the BoS experts the subject names to be renamed as follows
  - Strength of Materials subject as "Strength of Materials for Automobiles"

- Materials for Automotive Industry as "Materials for Automotive Components".
- Kinematics & Theory of Machines as "Theory of Machines"
- Two and Three Wheelers as "Two and Three Wheelers Technology".
- Modeling and control of Electric and Hybrid vehicles subject as "Modeling of Electric and Hybrid vehicles".
- Electronics and Micro Controllers as "Automotive Electronics and Micro Controllers".

➢ As per the suggestion given by the Dr. Annamalai sir, in Automotive Chassis subject
  - Lab to be included along with the theory to be R19 regulations.
  - New technology has to be added i.e., Airless tires
  - One reference book is suggested i.e.. Automobile Engineering by Prof. K.K. Ramalingam.

➢ As per the suggestion given by the Dr. R. Velusir, in Automotive Chassis subject one tutorial to be added to the Automotive Chassis subject and tutorial is removed from the Vehicle Body Engineering to compensate the number of credits.

➢ As per the suggestions given by the BoS experts in Strength of Materials text books L.N. Srinath, "Advanced Mechanics of Solids" to be removed and "Strength Materials" byBhavikatti to be added.

➢ As per the suggestion given by the BoS experts, the syllabus for Materiel of Automotive components to be similar to the Mechanical Engineering material syllabus.

➢ As per the suggestion given by Dr. Annamalai sir, in Engineering Thermodynamics and Heat Transfer addition of topics i.e., SFEE (continuity equation),properties of steam and simple problems using steam tables and mollier charts.

➢ As per the suggestion given by the Dr. R. Velu sir, Theory of machines subject
  - To be interchanged from **II-II** Semester to **II-I**for the ease of students.
  - Two reference books must be added i.e., Bhandari and Thomas Bevan.
  - Lab component is to be removed as it is a 3 credit course.
  - In Unit 5 forced vibrations to be added and transverse and torsional vibrations to be removed.

➢ As per the suggestions given by Dr. R. Velu, Manufacturing processes for Automotive components subject in Unit III Merchants circle to be added.

➢ As per the suggestions given by the BoS experts, "Manufacturing Technology" by Hajra Choudhury and P.N. Rao to be added in the prescribed text books.

➢ As per the suggestions given by Mr.K.N. Mohan, in Fundamentals of I.C Engines
  - H.N. Gupta is to be shifted to reference books.

- 3 lab experiments has to be removed i.e., Construction details of I.C engine, air compressor and boilers.

➢ As per the suggestions given by Dr. R. Velu, in Fluid mechanics and Machinery, one reference text book must be added i.e., Fluid Mechanics by Yunus A. Cengel.

➢ As per the suggestions given by the BoS experts, in vehicle Body Engineering, in Unit 5, painting techniques and repairing mechanism of bodies to be added.

➢ As per the suggestions given by the BoS experts, in Automotive electrical and electronics

- In unit 1 Floating headlights, and new technology in batteries and in unit 2 requirements of starting system, cut out relay and lazar ignition system to be added.
- In laboratory interfacing of D/A converter to be included

➢ As per the suggestions given by Dr. Annamalai sir and Dr. R. Velu sir, in Automotive Emission and Control subject

- Unit 1 side heading is to be 'survey on vehicle population' and in unit 4 dilution tunnels topic to be added.
- List of experiments to be added.

➢ As per the suggestions given by the BoS experts, in Two wheeler and three wheelers

- Latest topics to be added i.e., short circuiting, herringbone gears, Gyroscopic effect and pendulum effect, chain, belt, gear drive, cooling and lubricant systems, carburetion and electronic fuel injection systems.
- List of experiments to be added.

➢ As per the suggestions given by the BoS experts, in Electric and Hybrid Vehicles

- In unit 4 production and storage system for hydrogen and different types of membranes to be added and unit 5 regeneration and cogeneration of energy to be added.

➢ As per the suggestions given by the BoS experts, in Fundamentals of Motorsport Engineering, unit wise side headings must be included.

➢ As per the suggestions given by the BoS experts, in Special Purpose Vehicle subject Unit 3, latest topics to be added i.e Introduction to unmanned vehicles in minds.

➢ As per the suggestions given by the BoS experts, in Transport Management, latest software for optimization must be added in unit 5.

➢ As per the suggestions given by the BoS experts, New Generation and Hybrid vehicles in unit 4 latest topics like Global organization in the development of new generation and hybrid vehicles to be added.

Note :

⇒ As per the suggestions given by the BoS experts,

- Verification of course outcomes for all the subjects and they should be uniform i.e., either 4 or 5.
- Verification of mapping of course outcomes with programme outcomes for all the subjects.
- All the units side headings to be upper case.
- All the text books and reference books latest version to be printed and year of publishing to be mentioned.

Outcomes of the Meeting:

1. BOS members approved the revised curriculum (Structure, syllabus and regulations) of B.Tech , Automobile Engineering and it follows Choice Based Credit System . Structure is provided in Annexure-I.

2. Major restructuring has taken place in the curriculum which is oriented towards Project based learning with inclusion of Interdisciplinary, Inter-departmental and Societal centric and industry related projects. All the Courses in the Curriculum are designed to fall under either of the domains of employability or skill development. The mapping of the courses with employability or skill development is provided in Annexure II.

3. In all the courses of the revised curriculum (R19) substantial changes are made in the content and the list of new courses provided in Annexure -III.

4. Feedback for various stake holders such as employer, Alumni, teacher, parents and students is collected, analyzed and given utmost priority while designing the curriculum and their suggestions are implemented.

5. The concept about intra, inter and societal projects is appreciable.

6.35% Syllabus revision was carried out.

7. Credits for the NPTEL courses are appreciable, but faculty has to advise the students to choose advanced courses which are relevant to industry.

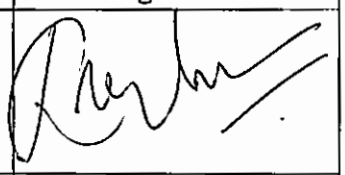
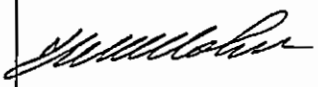
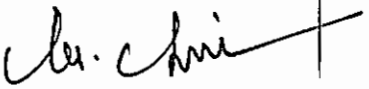
Chairman - BOS

Vignan's University::Vadlamudi
Department of Applied Engineering

Board of Studies – BoS
B.Tech Automobile Engineering

The following members are presented ;

External Members:

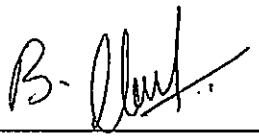
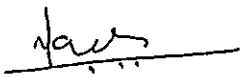
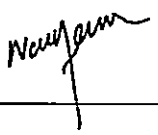
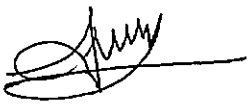
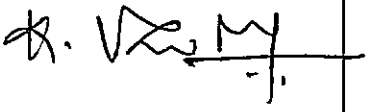
S. no	Name	Signature
1	Dr. R. Velu. Professor, School of Mechanical Engineering, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of Science and Technology, Avadi, Chennai	
2	Mr.K.N. Mohan Dy.CME, Production, Integral Coach factory, Chennai.	
3	Dr. K. Annamalai Madras Institute Of Technology, Anna University, Chennai.	

Department of Applied Engineering

Board of Studies –BoS

B.Tech –Automobile Engineering

Internal Members

S.No	Name	Signature
1.	Mr. B.Harish babu, member Asst. Prof , Applied Engineering, Vignan's Foundation for Science, Technology & Research	
2.	Mr.M. Naresh. member, Asst. Prof,Applied Engineering,Vignan's Foundation for Science, Technology & Research	
3.	Mr.N.Narayana Rao, member Asst.Prof, Applied Engineering, Vignan's Foundation for Science, Technology & Research	
4.	Ms. Anitha Reddy, member Asst.Prof,Applied Engineering, Vignan's Foundation for Science, Technology & Research	
5.	Dr. D Vinay Kumar, member Assc.Prof, Mechanical, Vignan's Foundation for Science, Technology & Research	
6.	Dr. D Satyanarayana, Member Professor, Vignan's Foundation for Science, Technology & Research	
7.	Dr. K Venkat Rao, Member Professor, Vignan's Foundation for Science, Technology & Research	

Appendix-I

B.Tech. Automobile Engineering Course Structure

I YEAR I Semester

S.No.	Course Name	L	T	P	C
1	Engineering Mathematics I (A)	3	1	2	5
2	Engineering Physics (B)	3	-	2	4
3	Basics of Electrical & Electronics Engineering	3		2	4
4	Engineering Graphics and Design	2		2	3
5	Engineering Mechanics	3	1		4
6	Human Values, Professional Ethics & Gender Equity	2	-	-	2
7	Physical Fitness, Sports & Games-I	-	-	3	1
	Total	**16**	**2**	**11**	**23**

I YEAR II Semester

S.No.	Course Name	L	T	P	C
1	Engineering Mathematics II (F)	3	1	2	5
2	Engineering Chemistry (B)	3	-	2	4
3	Programming for Problem Solving	2	-	4	4
4	English Proficiency and Communication Skills	-	-	2	1
5	Workshop	1	-	2	2
6	Constitution of India	1	-	-	1
7	Basic Engineering Products	2	-	2	3
8	Technical English Communication	2	-	2	3
9	Physical Fitness, Sports & Games-II	-	-	3	1
	Total	**14**	**1**	**19**	**24**

II YEAR I Semester

S.No.	Course Name	L	T	P	C
1	Probability and Statistics	3	1	-	4
2	Automotive Chassis	3	-	2	4
3	Strength of Materials for Automobiles	3	-	2	4
4	Materials for Automotive Components	3	-	2	4
5	Theory of Machines	3	-	-	3
6	Life Skills-I	-	-	2	0
7	Technical Seminar - I	-	-	2	1
8	Intra-Disciplinary Projects-I	-	-	3	1
9	Physical Fitness, Sports & Games-III	-	-	2	1
	Total	**15**	**1**	**15**	**22**

II YEAR II Semester

S.No.	Course Name	L	T	P	C
1	Engineering Thermodynamics and Heat Transfer	3		2	4
2	Manufacturing Processes for Automotive Components	3		2	4
3	Fundamentals of IC Engines	1		2	4
4	Environmental Studies	-			1
5	Management Science	1			3
6	Department elective – I	3			3
7	Open Elective – I	3			3
8	Life Skills – II	-		2	1
9	Technical Seminar – II	-		2	1
10	Intra-Disciplinary Projects-II	-		2	1
	Total	**20**		**12**	**25**

III YEAR I Semester

S.No.	Course Name	L	T	P	C
1	Automotive Transmission	3	-	-	4
2	Fluid Mechanics and Machinery	3	-	2	4
3	Automotive Component Design	3	-	2	4
4	Soft Skills Lab	2	-	2	1
5	Employability Skills – I	-	-	2	1
6	Inter-Departmental Projects – I	-	-	4	2
7	Modular Course	-	-		1
8	Department Elective – II	3	-		3
9	Open Elective-II	3	-		3
	Total	**17**		**12**	**22**

III YEAR II Semester

S.No.	Course Name	L	T	P	C
1	Vehicle Body Engineering	3	-		4
2	Automotive Engine Component Design	3	-	2	4
3	Automotive Electricals and Electronics	3	-	2	4
4	Professional Communication Lab	-	-	2	1
5	Employability Skills – II	-	-	2	1
6	Inter-Departmental Projects-II	-	-	4	2
7	Departmental Elective-II	3	-		3
8	Open Elective-III	3	-		3
	Total	**15**	**-**	**12**	**22**

IV YEAR I Semester

S.No.	Course Name	L	T	P	C
1	Automotive Emission and Control	3	-	2	4
2	Two and Three Wheeler Technology	3	-	2	4
3	Electric and Hybrid Vehicles	3	-	-	3
4	Vehicle Dynamics	3	-	-	3
5	Social Centric and Industry Related Projects	-	-	6	3
6	Departmental Elective- IV	3	-	-	3
	Total	**15**	**-**	**10**	**20**

IV YEAR II Semester

S.No.	Course Name	L	T	P	C
1	Project Work/Internship (Internship Oriented Projects)	-	-	24	12
	Total	**-**	**-**	**24**	**12**

***Highlighted Courses are offered under CBCS.**

Department Electives Courses

S.No.	Course Title
1	Intelligent Vehicle Technology
2	Nano Technology
3	Modern Vehicle Technology
4	Robotics
5	Super Charging and Turbo Charging
6	3D Printing for Automobile Components
7	Engineering Metrology and Instrumentation
8	Finite Element Method
9	Fundamentals of Motorsport Engineering
10	Vehicle Evaluation and Maintenance
11	Automotive Fuels, Lubricants and Coolants
12	Operations Research Management
13	Special Purpose Vehicles
14	Automotive Electronics and Micro Controllers
15	Automotive Air-Conditioning
16	Transport Management
17	Automotive Aerodynamics
18	New Generation and Hybrid Vehicles
19	Unconventional Manufacturing Processes
20	Automotive Safety

Open Elective Courses

S.No.	Course Title
1	Basic Automobile Engineering
2	On Road and Off-road Vehicles
3	Safety systems in Automobiles
4	Vehicle Maintenance and pollution Norms

Chairman-BOS

VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be UNIVERSITY)
-Estd. u/s 3 of UGC Act 1956

Appendix-II

List of Courses that enable employability or entrepreneurship or Skill development in the R19 B.Tech- Automobile Engineering

Year	Course Name	Course Nature
II	Automotive Chassis	Employability
II	Strength of materials for Automobile Engineers	Skill development
II	materials for automotive components	Employability
II	Theory of Machines	Skill development
II	Engineering Thermodynamics and Heat Transfer	Skill development
II	Manufacturing Processes for Automotive Components	Employability
II	Fundamentals of I.C Engines	Employability
III	Automotive Transmission	Skill development
III	Fluid Mechanics	Skill development
III	Automotive Component Design	Skill development
III	Vehicle body Engineering	Skill development
III	Automotive Engine Components Design	Skill development
III	Automotive Electricals and Electronics	Employability
IV	Automotive Emissions and Control	Employability
IV	Two and three wheeler Technology	Employability
IV	Electric and Hybrid Vehicles	Skill development
IV	Vehicle Dynamics	Skill development
E	Fundamentals of Motor Sport Engineering	Employability
E	Intelligent Vehicle Technology	Employability
E	Modern Vehicle Technology	Employability
E	Nanotechnology for Automobiles	Employability
E	Finite Element Methods	Employability
E	Racing Two Wheeler and Four Wheelers	Employability
E	Engineering Metrology and Instrumentation	Employability
E	New Generation And Hybrid Vehicles	Skill development
E	Robotics	Skill development
E	3D Printing for Automobile components	Employability
E	Special Purpose Vehicles	Employability
E	Automotive Electronics and Micro Controllers	Employability
E	Advance theory IC Engines	Skill development
E	Vehicle Evaluation Maintenance	Employability
E	Automotive Safety	Employability
E	Automotive Air Conditioning	Employability
E	Transport Management	Employability
E	Automotive Aerodynamics	Skill development
E	Unconventional Manufacturing Processes	Skill development
E	Super Charging And Turbo Charging	Skill development
E	Engine testing and certification	Employability
E	Modeling of Electric and Hybrid Vehicles	Skill development

E	Automotive Fuels, Lubricants And Coolants	Skill development
E	Operations management	Skill development
E	Noise, vibration, and harshness (NVH)	Employability
OE	Basic automobile engineering	Skill development
OE	On road and off road vehicles	Skill development
OE	Safety systems in automobiles	Skill development
OE	Vehicle maintenance and pollution norms	Skill development

Chairman -BOS

VIGNAN'S
Foundation for Science, Technology & Research
(Deemed to be UNIVERSITY)
-Estd. u/s 3 of UGC Act 1956

Appendix –III

List Of New Courses in the R-19 B.Tech Automobile Engineering

S.No	Semester (Year)	Course Name
1	II Year I Semester	Engineering Mathamatics - II
2	II Year I Semester	Automotive Chassis
3	II Year I Semester	Strength of Materials for Automobiles
4	II Year I Semester	Materials for Automotive Components
5	II Year I Semester	Theory of Machines
6	II Year I Semester	Life Skills - I
7	II Year I Semester	Technical Seminar - I
8	II Year I Semester	Intra disciplinary Project - 1
9	II Year I Semester	Physical fitness, Sports & Games - 3
10	II Year II Semester	Engineering Thermodynamics and Heat Transfer
11	II Year II Semester	Manufacturing Processes for Automotive Components
12	II Year II Semester	Fundamentals of IC Engines
13	II Year II Semester	Environmental Science
14	II Year II Semester	Life Skills II
15	II Year II Semester	Open Elective 1
16	II Year II Semester	Technical Seminar - II
17	II Year II Semester	Intra-disciplinary Project - 2
18	III Year I Semester	Automotive Transmission
19	III Year I Semester	Fluid Mechanics and Machinery
20	III Year I Semester	Automotive Component Design
21	III Year I Semester	Open Elective - II
22	III Year I Semester	Soft Skills Lab
23	III Year I Semester	Employability Skills - 1
24	III Year I Semester	Modular Course
25	III Year II Semester	Vehicle Body Engineering
26	III Year II Semester	Automotive Engine Components Design
27	III Year II Semester	Automotive Electricals and Electronics
28	III Year II Semester	Professional communications Lab
29	III Year II Semester	Employability skills - 2
30	III Year II Semester	Inter-departmental Project-2
31	IV Year I Semester	Automotive Emissions and Control
32	IV Year I Semester	Two and Three Wheelers
33	IV Year I Semester	Electric and Hybrid Vehicles
34	IV Year I Semester	Vehicle Dynamics
35	IV Year I Semester	Societal Centric Project and Industry Related Projects
36	IV Year II Semester	Internship/Project work(Internship oriented projects)
37	Elective	Fundamentals of Motor Sport Engineering
38	Elective	Intelligent Vehicle Technology
39	Elective	Modern Vehicle Technology
40	Elective	Nano Technology for Automobiles
41	Elective	Finite Element Methods
42	Elective	Racing Two Wheeler and Four Wheelers
43	Elective	Engineering Metrology and Instrumentation
44	Elective	New Generation And Hybrid Vehicles
45	Elective	ROBOTICS

46	Elective	3D Printing for Automobile components
47	Elective	Special Purpose Vehicles
48	Elective	Automotive Electronics and Micro Controllers
49	Elective	Advance theory IC Engines
50	Elective	Vehicle Evaluation Maintenance
51	Elective	Automotive Safety
52	Elective	Automotive Air Conditioning
53	Elective	Transport Management
54	Elective	Automotive Aerodynamics
55	Elective	Noise, vibration, and harshness (NVH)

Open Electives

1	Open Elective	Basic automobile engineering
2	Open Elective	On road and off road vehicles
3	Open Elective	Safety systems in automobiles
4	Open Elective	Vehicle maintenance and pollution norms

Chairman -BOS