K.E. Society's
# Rajarambapu Institute of Technology, Sakharale
(An Autonomous Institute, affiliated to Shivaji University, Kolhapur)
## Curriculum Structure and Evaluation Scheme
(To be implemented from Academic Year 2018-19)

*Rev: Auto Course Structure/RIT/02/2018-19*

**Department:** Automobile Engineering
**Class:** S. Y. B. Tech.

**Semester: III**

| Course Code | Course | L | T | P | Credits | Scheme | Theory (Marks %) Maxi. | Theory (Marks %) Min. for passing | Practical (Marks %) Maxi. | Practical (Marks %) Min. for passing |
|---|---|---|---|---|---|---|---|---|---|---|
| SH2032 | Engineering Mathematics – III | 3 | 1 | - | 4 | ISE | 20 | 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | ---- | ---- |
| | | | | | | UT2 | 15 | 40 | ---- | --- |
| | | | | | | ESE | 50 | 40 | ---- | ---- |
| AE2032 | Applied Thermodynamics | 3 | - | - | 3 | ISE | 20 | 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | ---- | ---- |
| | | | | | | UT2 | 15 | 40 | ---- | ---- |
| | | | | | | ESE | 50 | 40 | ---- | ---- |
| CE2032 | Engineering Mechanics | 3 | - | - | 3 | ISE | 20 | 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | ---- | ---- |
| | | | | | | UT2 | 15 | 40 | | |
| | | | | | | ESE | 50 | 40 | ---- | ---- |
| AE2052 | Fluid Mechanics & Fluid Machinery | 3 | - | - | 3 | ISE | 20 | 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | ---- | ---- |
| | | | | | | UT2 | 15 | 40 | --- | ---- |
| | | | | | | ESE | 50 | 40 | ---- | ---- |
| AE2072 | Material Science and Metallurgy | 3 | - | - | 3 | ISE | 20 | 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | ---- | ---- |
| | | | | | | UT2 | 15 | 40 | ---- | ---- |
| | | | | | | ESE | 50 | 40 | ---- | ---- |
| SH2172 | Environmental Science | 1* | - | - | 1 | ISE | 100 | 50 | ---- | ---- |
| AE2092 | Workshop Practice - I | - | - | 2 | 1 | ISE | ---- | ---- | 100 | 50 |
| CE2172 | Engineering Mechanics Lab. | - | - | 2 | 1 | ISE | ---- | ---- | 50 | 50 |
| AE2112 | Thermal Engg. Lab. | - | - | 2 | 1 | ISE | ---- | ---- | 50 | 50 |
| | | | | | | ESE | ---- | ---- | 50 | 50 |
| AE2132 | Fluid Mechanics & Fluid Machinery Lab. | - | - | 2 | 1 | ISE | ---- | ---- | 50 | 50 |
| | | | | | | ESE | ---- | ---- | 50 | 50 |
| AE2152 | Comprehensive Exam. - I | - | - | - | 1 | ESE | 100 | 50 | ---- | ---- |
| | **Open Elective – II** Choice Based Soft Skill Program - I | - | - | 2 | 1 | ISE | ---- | ---- | 100 | 50 |
| SH2602 | Environmental Science Project | - | - | 2 | 1 | ISE | 100 | 50 | ---- | ---- |
| | **TOTAL** | 16 | 1 | 12 | 24 | | | | | |

**Total Contact Hours/week: 29**　　　**Total Credits: 24**

**Comprehensive Exam. Courses:** Applied Thermodynamics, Fluid Mechanics & Fluid Machinery, Engineering Mechanics, Material Science & Metallurgy

ISE = In Semester Evaluation, UT1 = Unit Test-I, UT2 = Unit Test-II, ESE = End Semester Examination

**Note*: Department should allot one extra lecture to Environment Science in time Table.**

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*Rev: Auto Course Structure/RIT/02/2018-19*

Open Elective – II: Students should select any one course form the list of Choice Based Soft Skill Program – I.

**Open Elective – II**

Choice Based Soft Skill Program-I

| Sr. No. | Course Name | Course Code |
|---------|-------------|-------------|
| 1. | Personal Effectiveness & Body Language | SH2592 |
| 2. | Interpersonal Skills (Work life Balance) | SH2612 |
| 3. | Leadership & Public Speaking | SH2632 |
| 4. | Innovation Tools and Methods for Entrepreneurs | SH2692 |
| 5. | German Language – Basic Level | SH2732 |
| 6. | Japanese Language – Basic Level | SH2712 |

**Note:**

1. A student has to complete any two courses out of six choices offered under Choice Based Soft Skills Programme. A course in each semester will be allocated without any repetition.
2. The students who have completed 'German Language Lab' or 'Japanese Language Lab' in F. Y. B. Tech should not give their choice for 'German Language – Basic Level' and 'Japanese Language – Basic Level'. Such students may give their choices for 'German Language – Advanced Level' and 'Japanese Language – Advanced Level' (batch sizes 40 each) in the S.Y. B. Tech. Sem-IV only.
3. The students who will select and will successfully complete 'German Language – Basic Level' and 'Japanese Language – Basic Level' in S. Y. B. Tech. Sem-III will by default (mandatorily) appear for Advance Levels of said courses in Semester-IV.

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*Rev: Auto Course Structure/RIT/02/2018-19*

**Department:** Automobile Engineering
**Class:** S. Y. B. Tech.

**Semester: IV**

| Course Code | Course | Teaching Scheme | | | | Evaluation Scheme | | | | | |
| | | L | T | P | Credits | Scheme | Theory (Marks %) | | Practical (Marks %) | |
| | | | | | | | Maxi. | Min. for passing | Maxi. | Min. for passing |
|---|---|---|---|---|---|---|---|---|---|---|
| AE2022 | Theory of Machines | 3 | - | - | 3 | ISE | 20 | 40 / 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | ---- | ---- |
| | | | | | | UT2 | 15 | | ---- | --- |
| | | | | | | ESE | 50 | 40 | ---- | ---- |
| AE2042 | Heat Transfer | 3 | - | - | 3 | ISE | 20 | 40 / 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | ---- | ---- |
| | | | | | | UT2 | 15 | | ---- | ---- |
| | | | | | | ESE | 50 | 40 | ---- | ---- |
| AE2062 | Electric Drives and Controls | 3 | - | - | 3 | ISE | 20 | 40 / 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | ---- | ---- |
| | | | | | | UT2 | 15 | | | |
| | | | | | | ESE | 50 | 40 | ---- | ---- |
| AE2082 | Mechanics of Materials | 3 | - | - | 3 | ISE | 20 | 40 / 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | ---- | ---- |
| | | | | | | UT2 | 15 | | --- | ---- |
| | | | | | | ESE | 50 | 40 | ---- | ---- |
| AE2122 | Electric Drives and Controls Lab. | - | - | 2 | 1 | ISE | ---- | ---- | 100 | 50 |
| AE2142 | Kinematics & Dynamics of Machines Lab. | - | - | 2 | i | ISE | ---- | ---- | 50 | 50 |
| | | | | | | ESE | ---- | ---- | 50 | 50 |
| AE2162 | Heat Transfer Lab. | - | - | 2 | 1 | ISE | ---- | ---- | 50 | 50 |
| | | | | | | ESE | ---- | ---- | 50 | 50 |
| AE2182 | Software Skills Laboratory - I | - | - | 2 | 1 | ISE | --- | --- | 100 | 50 |
| AE2102 | Workshop Practice - II | - | - | 2 | 1 | ISE | ---- | ---- | 100 | 50 |
| AE2202 | Comprehensive Exam.-II | - | - | - | 1 | ESE | 100 | 50 | ---- | ---- |
| AE2222 | Computer Programming C++ | - | - | 4 | 2 | ISE | ---- | ---- | 50 | 50 |
| | | | | | | ESE | ---- | ---- | 50 | 50 |
| | Open Elective – III Choice Based Soft Skill Program - II | - | - | 2 | 1 | ISE | ---- | ---- | 100 | 50 |
| | **TOTAL** | 12 | - | 16 | 21 | | | | | |

**Total Contact Hours/week** : **28**
**Total Credits** : **21**
**Comprehensive Exam. Subjects** : Theory of Machines, Strength of Materials, Heat Transfer
ISE = In Semester Evaluation, UT1 = Unit Test-I, UT2 = Unit Test-II, ESE = End Semester Examination
Open Elective – IV: Students should select any one course form the list of Choice Based Soft Skill Program – II.

**Note: Students are required to undergo Summer Internship –I (Garage Training) of minimum four weeks in the vacation of Semester-IV and its evaluation will be carried out in the Semester-V**

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*Rev: Auto Course Structure/RIT/02/2018-19*

## Open Elective – III

Choice Based Soft Skill Program- II

| Sr. No. | Course Name | Course Code |
|---------|-------------|-------------|
| 1. | Personal Effectiveness & Body Language | SH2592 |
| 2. | Interpersonal Skills (Work life Balance) | SH2612 |
| 3. | Leadership & Public Speaking | SH2632 |
| 4. | Innovation Tools and Methods for Entrepreneurs | SH2692 |
| 5. | German Language – Advanced Level | SH2642 |
| 6. | Japanese Language – Advanced Level | SH2622 |

**Note:**

1. A student has to complete any two courses out of six choices offered under Choice Based Soft Skills Programme. A course in each semester will be allocated without any repetition.

2. The students who have completed 'German Language Lab' or 'Japanese Language Lab' in F. Y. B. Tech should not give their choice for 'German Language – Basic Level' and 'Japanese Language – Basic Level'. Such students may give their choices for 'German Language – Advanced Level' and 'Japanese Language – Advanced Level' (batch sizes 40 each) in the S.Y. B. Tech. Sem-IV only.

3. The students who will select and will successfully complete 'German Language – Basic Level' and 'Japanese Language – Basic Level' in S. Y. B. Tech. Sem-III will by default (mandatorily) appear for Advance Levels of said courses in Semester-IV.

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*Rev: Auto Course Structure/RIT/02/2018-19*

**Department:** Automobile Engineering

**Class:** T. Y. B. Tech.

**Semester: V**

| Course Code | Course | L | T | P | Credits | Scheme | Theory (Marks %) Maxi. | Theory (Marks %) Min. for passing | | Practical (Marks %) Maxi. | Practical (Marks %) Min. for passing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AE3012 | Internal Combustion Engines | 3 | - | - | 3 | ISE | 20 | | | ---- | ---- |
| | | | | | | UT1 | 15 | 40 | 40 | ---- | ---- |
| | | | | | | UT2 | 15 | | | ---- | --- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| AE3032 | Automotive Systems | 3 | - | - | 3 | ISE | 20 | | | ---- | ---- |
| | | | | | | UT1 | 15 | 40 | 40 | ---- | ---- |
| | | | | | | UT2 | 15 | | | ---- | ---- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| AE3052 | Automotive Electrical & Electronics | 3 | - | - | 3 | ISE | 20 | | | ---- | ---- |
| | | | | | | UT1 | 15 | 40 | 40 | ---- | ---- |
| | | | | | | UT2 | 15 | | | ---- | ---- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| AE3072 | Manufacturing Technology | 3 | - | - | 3 | ISE | 20 | | | ---- | ---- |
| | | | | | | UT1 | 15 | 40 | 40 | ---- | ---- |
| | | | | | | UT2 | 15 | | | --- | ---- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| | Program Elective-I | 3 | - | - | 3 | ISE | 20 | | | ---- | ---- |
| | | | | | | UT1 | 15 | 40 | 40 | ---- | ---- |
| | | | | | | UT2 | 15 | | | ---- | ---- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| AE3232 | I. C. Engine Lab. | - | - | 2 | 1 | ISE | ---- | ---- | | 50 | 50 |
| | | | | | | ESE | ---- | ---- | | 50 | 50 |
| AE3252 | Automobile Engineering Lab. | - | - | 2 | 1 | ISE | ---- | ---- | | 50 | 50 |
| | | | | | | ESE | ---- | ---- | | 50 | 50 |
| AE3272 | Workshop Practice - III | - | - | 2 | 1 | ISE | ---- | ---- | | 50 | 50 |
| | | | | | | ESE | ---- | ---- | | 50 | 50 |
| SH3032 | Aptitude Training -I | 2* | - | - | 2 | ISE | 20 | | | | |
| | | | | | | UT-1 | 15 | 40 | 40 | ---- | ---- |
| | | | | | | UT-2 | 15 | | | | |
| | | | | | | ESE | 50 | 40 | | | |
| SH3012 | Constitution of India | 2 | - | - | Audit | ISE | 100 | 50 | | ---- | ---- |
| AE3292 | Comprehensive Exam. - III | - | - | 2 | 1 | ESE | 100 | 50 | | ---- | ---- |
| AE3312 | Summer Internship - I | - | - | - | 2 | ISE | ---- | ---- | | 100 | 50 |
| | **TOTAL** | **19** | **-** | **08** | **23** | | | | | | |

**Total Contact Hours/week : 27**

**Total Credits : 23**

**Comprehensive Exam. Courses:** Internal Combustion Engines, Automotive Systems, Manufacturing Technology

ISE = In Semester Evaluation, UT1 = Unit Test-I, UT2 = Unit Test-II, ESE = End Semester Examination

**Note*:** Department should allot one extra lecture to Aptitude Training-I in time Table.

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*Rev: Auto Course Structure/RIT/02/2018-19*

**Program Elective – I:**

| Sr. No. | Course Code | Domain | Course |
|---------|-------------|--------|--------|
| 1 | AE3092 | Vehicle Design & Development | Automotive Styling and Design |
| 2 | AE3112 | Production and Manufacturing | Automotive Production Systems |
| 3 | AE3132 | | Welding and Joining Technology |
| 4 | AE3152 | Current & Future Technology | Hydraulics and Pneumatics |
| 5 | AE3172 | | Painting Technology |
| 6 | AE3192 | Product Life cycle Management & Services | Tribology |
| 7 | AE3212 | | Recycling of Automobile |

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*Rev: Auto Course Structure/RIT/02/2018-19*

**Department:** Automobile Engineering

**Class:** T. Y. B. Tech.

**Semester: VI**

| Course Code | Course | Teaching Scheme | | | | Evaluation Scheme | | | | | |
| | | L | T | P | Credits | Scheme | Theory (Marks %) | | | Practical (Marks %) | |
| | | | | | | | Maxi. | Min. for passing | | Maxi. | Min. for passing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AE3022 | Machine & Engine Design | 3 | 1 | - | 4 | ISE | 20 | 40 | 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | | ---- | ---- |
| | | | | | | UT2 | 15 | | | ---- | --- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| AE3042 | Automotive Embedded Systems | 2 | - | - | 2 | ISE | 20 | 40 | 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | | ---- | ---- |
| | | | | | | UT2 | 15 | | | ---- | ---- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| AE3062 | Electric & Hybrid Vehicles | 2 | - | - | 2 | ISE | 20 | 40 | 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | | ---- | ---- |
| | | | | | | UT2 | 15 | | | | |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| | Program Elective - II | 3 | - | - | 3 | ISE | 20 | 40 | 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | | ---- | ---- |
| | | | | | | UT2 | 15 | | | --- | ---- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| SH3022 | Biology For Engineers | 2 | - | - | 2 | ISE | 20 | 40 | 40 | ---- | ---- |
| | | | | | | UT1 | 15 | | | ---- | ---- |
| | | | | | | UT2 | 15 | | | ---- | ---- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| AE3202 | Electric & Hybrid Vehicles Lab. | - | - | 2 | 1 | ISE | ---- | ---- | | 50 | 50 |
| | | | | | | ESE | ---- | ---- | | 50 | 50 |
| AE3222 | Automotive Diagnostic Lab. | - | - | 2 | 1 | ISE | ---- | ---- | | 50 | 50 |
| | | | | | | ESE | ---- | ---- | | 50 | 50 |
| SH3052 | Aptitude Training -II | 2* | - | - | 2 | ISE | 20 | 40 | 40 | ---- | ---- |
| | | | | | | UT-1 | 15 | | | | |
| | | | | | | UT-2 | 15 | | | | |
| | | | | | | ESE | 50 | 40 | | | |
| AE3242 | Mini Project | - | - | 2 | 1 | ISE | ---- | ---- | | 100 | 50 |
| AE3262 | Software Skills Laboratory - II | - | - | 2 | 1 | ISE | ---- | ---- | | 100 | 50 |
| AE3282 | Comprehensive Exam.- IV | - | - | - | 1 | ESE | 100 | 50 | | ---- | ---- |
| | **TOTAL** | 14 | 1 | 08 | 20 | | | | | | |

**Total Contact Hours/week** : 23
**Total Credits** : 20
**Comprehensive Exam. Courses:** Machine & Engine Design, Electric & Hybrid Vehicles, Automotive Embedded Systems

ISE = In Semester Evaluation, UT1 = Unit Test-I, UT2 = Unit Test-II, ESE = End Semester Examination

**Note: Students are required to undergo Summer Internship – II (Industrial Training) of minimum four weeks in the vacation of Semester-VI and its evaluation will be carried out in the Semester-VII**

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*Rev: Auto Course Structure/RIT/02/2018-19*

Note*: Department should allot one extra lecture to Aptitude Training-II in time Table.

**Program Elective - II:**

| Sr. No. | Course Code | Domain | Course |
|---------|-------------|--------|--------|
| 1 | AE3082 | Vehicle Design & Development | Product Design and Development |
| 2 | AE3102 | Production and Manufacturing | Product Life Cycle Management |
| 3 | AE3122 | | Jigs and Fixture |
| 4 | AE3142 | Current & Future Technology | Engine & Battery Management Systems |
| 5 | AE3162 | | Automotive Sensors and Applications |
| 6 | AE3182 | Product Life cycle Management & Services | Automotive Diagnostics |

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*Rev: Auto Course Structure/RIT/02/2018-19*

**Department:** Automobile Engineering
**Class:** Final Year B. Tech.

**Semester: VII**

| Course Code | Course | Teaching Scheme | | | | Evaluation Scheme | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | Credits | Scheme | Theory (Marks %) | | Practical (Marks %) | | |
| | | | | | | | Maxi. | Min. for passing | | Maxi. | Min. for passing |
| AE4012 | Automotive System Design | 3 | - | - | 3 | ISE | 20 | | | ---- | ---- |
| | | | | | | UT1 | 15 | 40 | 40 | ---- | ---- |
| | | | | | | UT2 | 15 | | | ---- | --- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| AE4032 | Vehicle Dynamics | 3 | - | - | 3 | ISE | 20 | | | ---- | ---- |
| | | | | | | UT1 | 15 | 40 | 40 | ---- | ---- |
| | | | | | | UT2 | 15 | | | ---- | ---- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| | Program Elective - III | 2 | - | - | 2 | ISE | 20 | | | ---- | ---- |
| | | | | | | UT1 | 15 | 40 | 40 | ---- | ----- |
| | | | | | | UT2 | 15 | | | ---- | ---- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| | Program Elective - IV | 3 | - | - | 3 | ISE | 20 | | | ---- | ---- |
| | | | | | | UT1 | 15 | 40 | 40 | ---- | ---- |
| | | | | | | UT2 | 15 | | | --- | ---- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| | **Open Elective - IV** | 3 | - | - | 3 | ISE | 20 | | | ---- | ---- |
| | | | | | | UT1 | 15 | 40 | 40 | ---- | ---- |
| | | | | | | UT2 | 15 | | | ---- | ---- |
| | | | | | | ESE | 50 | 40 | | ---- | ---- |
| AE4312 | Vehicle Performance Evaluation & Emission Testing Lab. | - | - | 2 | 1 | ISE | ---- | ---- | | 50 | 50 |
| | | | | | | ESE | ---- | ---- | | 50 | 50 |
| | Program Elective - IV Lab. | - | - | 2 | 1 | ISE | ---- | ---- | | 50 | 50 |
| | | | | | | ESE | ---- | ---- | | 50 | 50 |
| | Phase -I | - | - | 2 | 1 | ISE | ---- | ---- | | 100 | 50 |
| AE4702 | Summer Internship - II | - | - | - | 2 | ISE | --- | --- | | 100 | 50 |
| | **TOTAL** | 14 | - | 6 | 19 | | | | | | |

**Total Contact Hours/week** : 20
**Total Credits** : 19

ISE = In Semester Evaluation, UT1 = Unit Test-I, UT2 = Unit Test-II, ESE = End Semester Examination

| Sr. No. | Choice Based Track | Phase –I Details | Course Code |
|---|---|---|---|
| 1 | Internship & Project (IIP) | Liberal Learning | IP4012 |
| 2 | Undergraduate Research Experience (URE) | URE Synopsis | RE4012 |
| 3 | Entrepreneurship Development (ED) | Prefeasibility Report | ED4012 |
| 4 | Regular Capstone Project (CP) | CP Synopsis | AE4332 |

Note: Students will work on Phase-I of choice based track allotted to them.

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## Program Elective – III:

| Sr. No. | Course Code | Domain | Course |
|---------|-------------|--------|--------|
| 1 | AE4052 | Vehicle Design & Development | Design of Vehicle Operated Farm Equipments |
| 2 | AE4072 | Production and Manufacturing | Sheet Metal Manufacturing |
| 3 | AE4092 | | Advanced Automotive Materials |
| 4 | AE4112 | Current & Future Technology | Intelligent Transport System |
| 5 | AE4132 | | Automotive HVAC |
| 6 | AE4152 | Product Life cycle Management & Services | Dealership Management |

## Program Elective – IV:

| Sr. No. | Course Code | Domain | Course |
|---------|-------------|--------|--------|
| 1 | AE4172 | Vehicle Design & Development | Finite Element Methods |
| 2 | AE4192 | | Automotive NVH |
| 3 | AE4212 | Production and Manufacturing | Reverse Engineering |
| 4 | AE4232 | | Nano and Micro Technology |
| 5 | AE4252 | Current & Future Technology | Automotive Safety |
| 6 | AE4272 | | Automotive Emission Control |
| 7 | AE4292 | Product Life cycle Management & Services | Motor Vehicle Insurance Practices |

## Open Elective – IV:

| Sr. No. | Branch | Course Code | Semester-VII Open Elective-IV Courses |
|---------|--------|-------------|----------------------------------------|
| 1 | Automobile | OE4012 | Reliability Engineering |
| 2 | Automobile | OE4032 | Product Design and Development |
| 3 | Automobile | OE4052 | Design Thinking & Innovation |
| 4 | Civil | OE4072 | Metro Systems and Engineering. |
| 5 | Civil | OE4092 | Engineering Economics. |
| 6 | Civil | OE4112 | Industrial Safety and Risk Management. |
| 7 | Computer | OE4132 | Cyber Laws |
| 8 | Computer | OE4152 | Database Administration |
| 9 | Electrical | OE4172 | Optimization Techniques |
| 10 | Electrical | OE4192 | Electrical Materials |
| 11 | E&TC | OE4212 | Mechatronics |
| 12 | IT | OE4232 | Open Source Software |
| 13 | Mechanical | OE4252 | Aircraft Systems |
| 14 | Mechanical | OE4272 | Supply Chain Management |
| 15 | Mechanical | OE4292 | Non-conventional Energy Sources |
| 16 | Mechanical | OE4312 | New Product Design and Development |
| 17 | MBA | OE4332 | Marketing for Engineers |

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*Rev: Auto Course Structure/RIT/02/2018-19*

**Program Elective – IV Lab.:**

| Sr. No. | Course Code | Domain | Course |
|---------|-------------|--------|--------|
| 1 | AE4332 | Vehicle Design & Development | Finite Element Methods Lab. |
| 2 | AE4352 | | Automotive NVH Lab. |
| 3 | AE4372 | Production and Manufacturing | Reverse Engineering Lab. |
| 4 | AE4392 | | Nano and Micro Technology Lab. |
| 5 | AE4412 | Current & Future Technology | Automotive Safety Lab. |
| 6 | AE4432 | | Automotive Emission Control Lab. |
| 7 | AE4452 | Product Life cycle Management & Services | Motor Vehicle Insurance Practices Lab. |

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*Rev: Auto Course Structure/RIT/02/2018-19*

### Track I: Industry Internship & Projects (IIP)

**Department:** Automobile Engineering

**Class:** Final Year B. Tech.                    **Semester:** VIII

| Sr.No | Course Code | Course | Teaching Scheme | | | Credits | Scheme | Theory (Marks %) | | Practical (Marks %) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | T | P | | | Maxi. | Min. for passing | Maxi. | Min. for passing |
| 1 | IPAE4022 | Online Course- I/Self Learning Course - I | - | - | - | 3 | ESE* | ---- | ---- | 100 | 50 |
| 2 | OE4362 | Engineering Management & Economics (Online Course) | - | - | - | 2 | ESE* | ---- | ---- | 100 | 50 |
| 3 | IP4022 | Internship & Project | - | - | - | 11 | ISE | ---- | ---- | 50 | 50 |
| | | | | | | | ESE | ---- | ---- | 50 | 50 |
| **Total** | | | **-** | **-** | **-** | **16** | | | | | |

**Total Contact Hours/week**      : --
**Total Credits**            : **16**

ISE = In Semester Evaluation, ESE = End Semester Exam

**Note:**
1] Online or self-learning course may be:
    A] Online Certification Course
    B] Self-study course approved by Dean Academics
      All courses should be related to Industry project.
2] Engineering Management is Compulsory online course.

**\*** Indicates that, student needs to produce certificate of online or certification course at the time of ESE. If student fails to produce this certificate, he or she will not be eligible to give ESE of Online course.

*3] Weekly Contact hours are not mentioned as student is expected to be in industry regularly for 20 weeks. However, student needs to report to Institute mentors as and when required.*

K.E. Society's
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**Curriculum Structure and Evaluation Scheme**
(To be implemented from Academic Year **2018-19**)

*Rev: Auto Course Structure/RIT/02/2018-19*

## Track II: Undergraduate Research Experience (URE)

**Department:** Automobile Engineering
**Class:** Final Year B. Tech.

**Semester: VIII**

| Sr. No. | Course Code | Course | Teaching Scheme | | | Credits | Evaluation Scheme | | | | | |
|---------|-------------|--------|-----|-----|-----|---------|--------|------|------|------|------|------|
| | | | | | | | Scheme | Theory (Marks %) | | | Practical (Marks %) | |
| | | | L | T | P | | | Maxi. | Min. for passing | Maxi. | Min. for passing |
| 1 | RE4022 | Research Methodology | 3 | - | - | 3 | ISE | 20 | 40 | ---- | ---- |
| | | | | | | | UT-1 | 15 | | | |
| | | | | | | | UT-2 | 15 | | | |
| | | | | | | | ESE | 50 | 40 | | |
| 2 | RE4062 | Research Methodology Lab | - | - | 2 | 1 | ISE | ---- | ---- | 100 | 50 |
| 3 | OE4362 | Engineering Management & Economics (Online Course) | - | - | - | 2 | ESE* | ---- | ---- | 100 | 50 |
| 4 | RE4042 | Research Project | - | - | 10 | 10 | ISE | ---- | ---- | 50 | 50 |
| | | | | | | | ESE | ---- | ---- | 50 | 50 |
| **Total** | | | **3** | **-** | **12** | **16** | | | | | |

**Total Contact Hours/week** : 15
**Total Credits** : 16
ISE = In Semester Evaluation, UT-I = Unit Test-I, UT-II = Unit Test-II   ESE = End Semester Exam
**Note:**

1] Engineering Management & Economics is Compulsory online course.

\* For Online Certification course, student needs to produce certificate of online course at the time of ESE. If student fails to produce this certificate, he or she will not be eligible to give ESE of Online course.
All courses should be related to research project.

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## Track III: Entrepreneurship Development (ED)

**Department:** Automobile Engineering

**Class:** Final Year B. Tech.

**Semester:** VIII

| Sr. No. | Course Code | Course | Teaching Scheme | | | Credits | Scheme | Evaluation Scheme | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Theory (Marks %) | | Practical (Marks %) | |
| | | | L | T | P | | | Maxi. | Min. for passing | Maxi. | Min. for passing |
| 1 | ED4102 | Project Management | 3 | - | - | 3 | ISE | 20 | 40 | ---- | ---- |
| | | | | | | | UT-1 | 15 | | | |
| | | | | | | | UT-2 | 15 | | 40 | |
| | | | | | | | ESE | 50 | 40 | | |
| 2 | ED4042 | Commercial Aspects of the Project | 3 | - | - | 3 | ISE | 20 | 40 | ---- | ---- |
| | | | | | | | UT-1 | 15 | | | |
| | | | | | | | UT-2 | 15 | | 40 | |
| | | | | | | | ESE | 50 | 40 | | |
| 3 | ED4062 | Entrepreneurship Development Program (EDP) | - | - | - | 1 | ISE | ---- | ---- | 100 | 50 |
| 4 | ED4082 | Entrepreneurship Development Project | - | - | 9 | 9 | ISE | ---- | ---- | 50 | 50 |
| | | | | | | | ESE | ---- | ---- | 50 | |
| **Total** | | | **6** | **-** | **9** | **16** | | | | | |

**Total Contact Hours/week** : 15
**Total Credits** : 16
ISE = In Semester Evaluation, UT-I = Unit Test-I, UT-II = Unit Test-II   ESE = End Semester Exam

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**Track IV: Regular Capstone Project (CP)**

**Department:** Automobile Engineering

**Class:** Final Year B. Tech.

**Semester: VIII**

| Course Code | Course | Teaching Scheme | | | | Evaluation Scheme | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | L | T | P | Credits | Scheme | Theory (Marks %) | | Practical (Marks %) | | |
| | | | | | | | Maxi. | Min. for passing | Maxi. | Min. for passing | |
| | Program Elective-V | 3 | - | - | 3 | ISE | 20 | 40 | ---- | ---- | |
| | | | | | | UT1 | 15 | | ---- | ---- | |
| | | | | | | UT2 | 15 | 40 | ---- | ---- | |
| | | | | | | ESE | 50 | 40 | ---- | ---- | |
| | **Open Elective-V** | 3 | - | - | 3 | ISE | 20 | 40 | ---- | ---- | |
| | | | | | | UT1 | 15 | | ---- | ---- | |
| | | | | | | UT2 | 15 | 40 | ---- | ---- | |
| | | | | | | ESE | 50 | 40 | ---- | ---- | |
| OE4362 | Engineering Management & Economics (Online Course) | - | - | - | 2 | ESE* | ---- | ---- | 100 | 50 | |
| AE4202 | Capstone Project | | | 8 | 8 | ISE | ---- | ---- | 50 | 50 | |
| | | | | | | ESE | ---- | ---- | 50 | 50 | |
| | **TOTAL** | 6 | - | 08 | 16 | | | | | | |

**Total Contact Hours/week : 14**
**Total Credits        : 16**
ISE = In Semester Evaluation, UT-I = Unit Test-I, UT-II = Unit Test-II ESE = End Semester Exam
1] Engineering Management & Economics is Compulsory online course.

**\*** For Online Certification course, student needs to produce certificate of online course at the time of ESE. If student fails to produce this certificate, he or she will not be eligible to give ESE of Online course.

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**Program Elective – V:**

| Sr. No. | Course Code | Domain | Course |
|---------|-------------|--------|--------|
| 1 | AE4022 | Vehicle Design & Development | Computational Fluid Dynamics |
| 2 | AE4042 | | Experimental Stress Analysis |
| 3 | AE4062 | Production and Manufacturing | Operations Research |
| 4 | AE4082 | | Inventory Management |
| 5 | AE4102 | Current & Future Technology | Special Purpose Vehicle |
| 6 | AE4122 | | Vehicle Aerodynamics |
| 7 | AE4142 | Product Life cycle Management & Services | Reliability Centered Maintenance |
| 8 | AE4162 | | Transport Management |

**Open Elective – V:**

| Sr. No. | Branch | Course Code | Semester-VIII Open Elective-V Courses |
|---------|--------|-------------|----------------------------------------|
| 1 | Automobile | OE4022 | Renewable Energy Sources |
| 2 | Automobile | OE4042 | Transport Management |
| 3 | Automobile | OE4062 | Electric and Hybrid Electrical Vehicle |
| 4 | Civil | OE4082 | Smart Cities and Sustainable Development. |
| 5 | Civil | OE4102 | Material Management. |
| 6 | Computer | OE4122 | Network Administration |
| 7 | Computer | OE4142 | Information Technology Foundation Program |
| 8 | Electrical | OE4162 | Finance Management |
| 9 | Electrical | OE4182 | Electrical Installations and Maintenance |
| 10 | E&TC | OE4202 | Image Processing |
| 11 | IT | OE4222 | Information Technology and Business Management |
| 12 | Mechanical | OE4242 | Computational Fluid Dynamics |
| 13 | Mechanical | OE4262 | Entrepreneurship Development |
| 14 | Mechanical | OE4282 | Hybrid Vehicles |
| 15 | Mechanical | OE4302 | Maintenance Management |
| 16 | Mechanical | OE4322 | Reverse Engineering and Benchmarking |
| 17 | MBA | OE4342 | Finance for Engineers |