



RV College of Engineering®

CENTERS OF COMPETENCE



96th

**NIRF Ranking in
Engineering 2023**

IIRF 2023

Engineering Ranking India

**National Rank-10
State Rank-02
Zone Rank-05**

AAA

**Rating in NPTEL local chapter
(Jan-April 2024)**

**1 - State Ranking
16 - National Ranking**

1501+

**Times Higher Education World University
Rankings-2024**

601+

Asia University Ranking - 2024

1001+

Subject Ranking (Engineering)

801+

Subject Ranking (Computer Science)

1501+

**IMPACT
Ranking**

ABOUT RVCE

RV College of Engineering® (RVCE) established in 1963 is one of the earliest self-financing engineering institutions in the country. The institution is run by Rashtreeya Sikshana Samithi Trust (RSST) a not-for-profit Trust. RVCE is an Autonomous college. Currently, the institution offers 15 Bachelor, 14 Master Programs and 15 departments have Research Centres, affiliated to Visvesvaraya Technological University (VTU) Belagavi.

MISSION

- To deliver Outcome Based Quality Education, emphasizing on experiential learning with the state-of-the-art infrastructure.
- To deate coessive an trougentir interdicalin eyesich individuatirowth, discipline, integrity, ethics and social sensitivity.
- To nurture industry-institution collaboration leading to competency enhancement and entrepreneurship.
- To focus on technologies that are sustainable and inclusive, benefiting all sections of the society.

VISION

To nurture industry-institution collaboration leading to competency enhancement and entrepreneurship.

QUALITY POLICY

Achieving Excellence in Technical Education, Research and Consulting through an Outcome Based Curriculum focusing on Continuous Improvement and Innovation by Benchmarking against the global Best Practices.

CORE VALUES

- Professionalism
- Commitment
- Integrity
- Teamwork
- Innovation

CENTERS OF COMPETENCE FOR SKILL DEVELOPMENT

- RV - MB Centre for Automotive Mechatronics
- Bosch Rexroth - RVCE Centre of Competence in Automation
- Centre for Automation and Robotics (Digital Manufacturing)
- Centre for Nano Materials and Device
- Centre for 5G and Emerging Wireless Technology
- RVCE - Morris Garage Centre for Electric Vehicle Technology
- Centre of Competence in Advanced Automotive Systems (Decibels)
- RVCE - Toyota Kirloskar Motor Centre of Excellence in Automotive Engineering
- Centre of Competence in Safety, Sustainability and Smart infrastructure
- Centre for Health Care Technology Research
- Centre for Smart Vidyuth & Sustainable Solutions

1. Automation Technologies

RV-Bosch Rexroth

The Center for automation technologies was established in 2010 in collaboration with Bosch Rexroth. This interdisciplinary facility provides training to students, faculty, and industry personnel in the area of Hydraulics & Pneumatics, Mechatronics, PLC, and the Industrial Internet of Things.

YOUR PARAGRAPH TEXT

Areas of Expertise

Industry 4.0
IoT Application & Implementation

Mechatronics
Applications & Demonstration



Hydraulics & Pneumatics
Circuit design & Analysis

PLC & SCADA
Programming & Simulation

Facility & Infrastructure

The center is well equipped with H/W and S/W facilities such as hydraulic and pneumatic training kits, new generation PLCs, Mechatronics system, Motion controllers, CNC simulator, Automation Studio software, Indralogics, Winstudio, and IoT gateway software.

Hydraulics & Pneumatics



Hydraulics & Pneumatics
Hardware kit to execute various circuits and also Automation studio simulation software to verify the same

PLC & SCADA



PLC & SCADA
Basic to new generation Hardware PLC kits and Indralogic works software to execute the same.

Mechatronics



Mechatronics
Automated assembly operation system, PLCs to change the sequence of operations

Industry 4.0



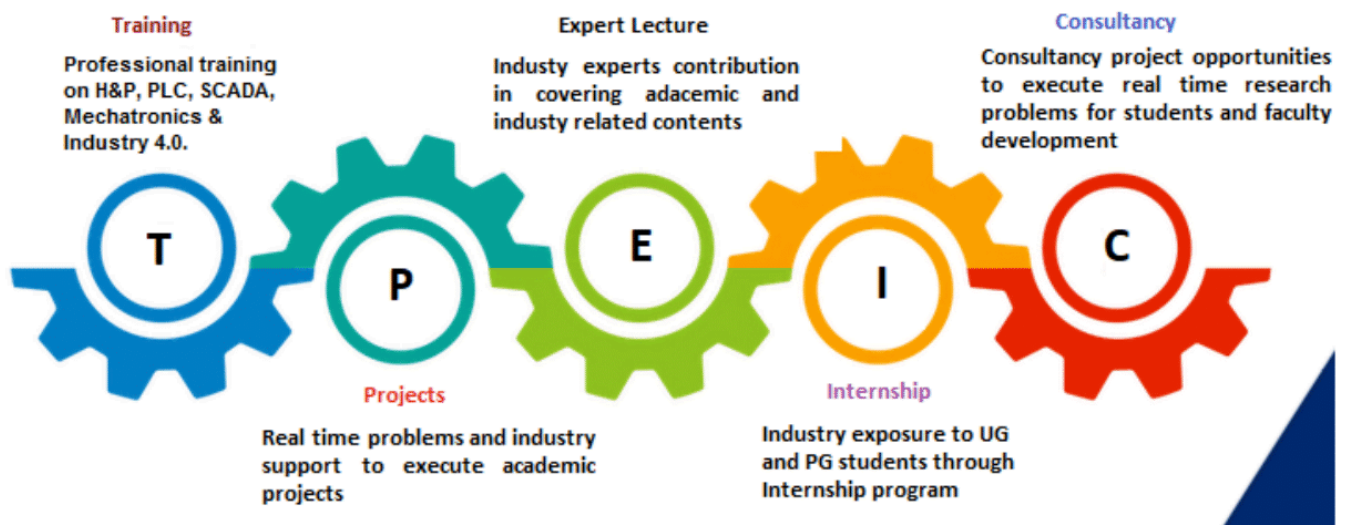
Industry 4.0 kit
Understanding the basic requirement to create IoT based project and cloud connection through gateway

Achievements



- Professional training on Hydraulics and Pneumatics system, Mechatronics, PLC-SCADA, and Industry 4.0
- Internship : Providing opportunities to students to get industry exposure and corporate culture.
- Student Projects: Supporting academic projects by defining real time projects and involvement of industry experts to guide the students
- Consultancy projects: Opportunities for faculty and students to execute the research related problems based on industry inputs

Activity & Research Collaboration



Department Involved:
Department of Mechanical Engineering
Department of Electronics & Communication Engineering
Department of Electronics & Instrumentation

Contact details

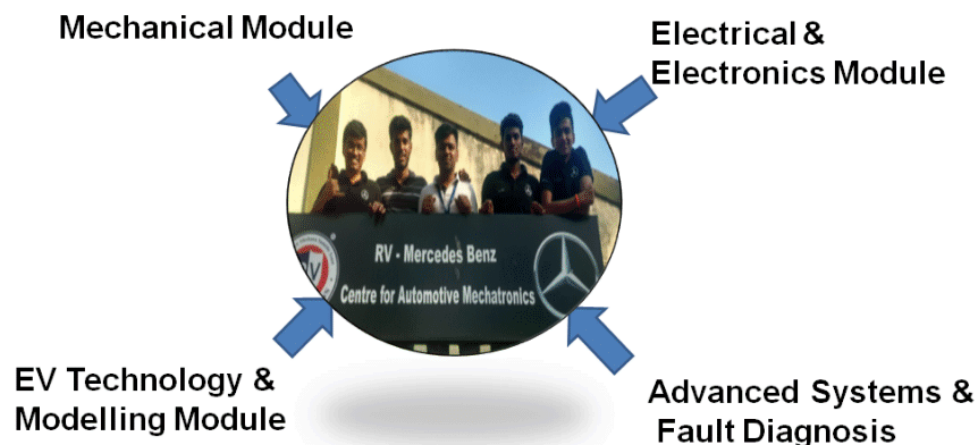
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2. Automotive Mechatronics (RVCE - Mercedes Benz)

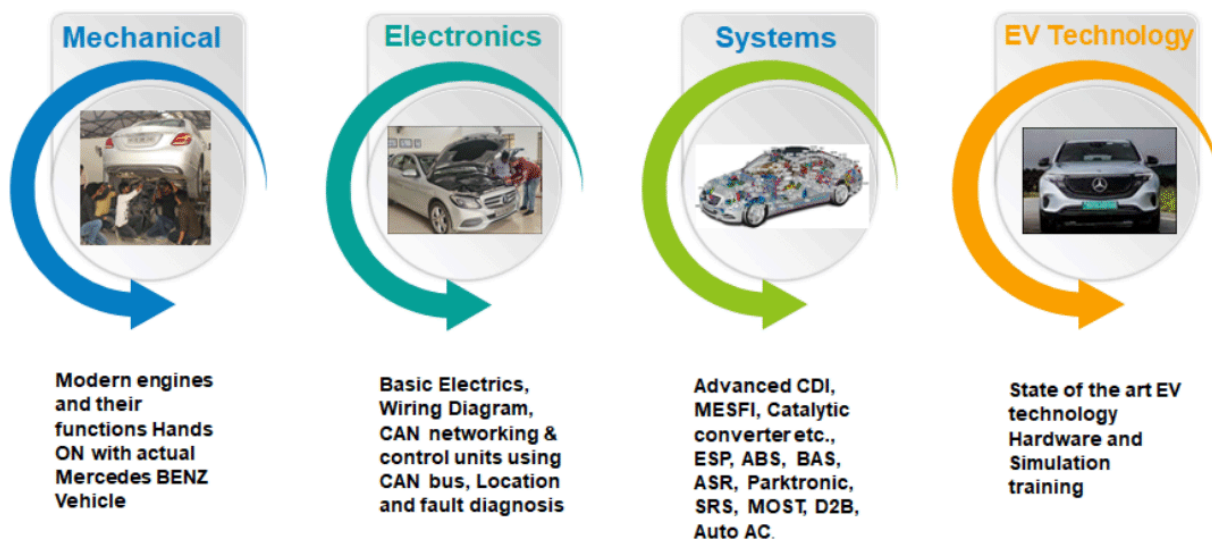
RVCE in association with Mercedes Benz Academy offers a globally valid one-year 'Advanced Diploma in Automotive Mechatronics'. The course is predominantly skill-based with an emphasis on hands-on learning. Mercedes is involved in planning the syllabus, development of state-of-the-art EV - technology, car bay, aggregate training rooms equipped with Mercedes-Benz training cars, engines, transmissions, training of faculty, and supply of tools & equipment to train students in-line with the rapidly growing luxury automotive sector not only in India but across the globe. The aim of the course is to produce qualified, industry-ready professionals to be recruited at dealerships of MBIL as well as other brands of automobiles, automotive manufacturing plants, and also at automotive R&D centers.

Modules



Facility & Infrastructure

Faculty /trainers from RVCE, are Doctorates/Postgraduates in Engineering with rich experience and are trained on Automotive Mechatronics at Mercedes-Benz plant in Chakan, Pune



Achievements



Activities



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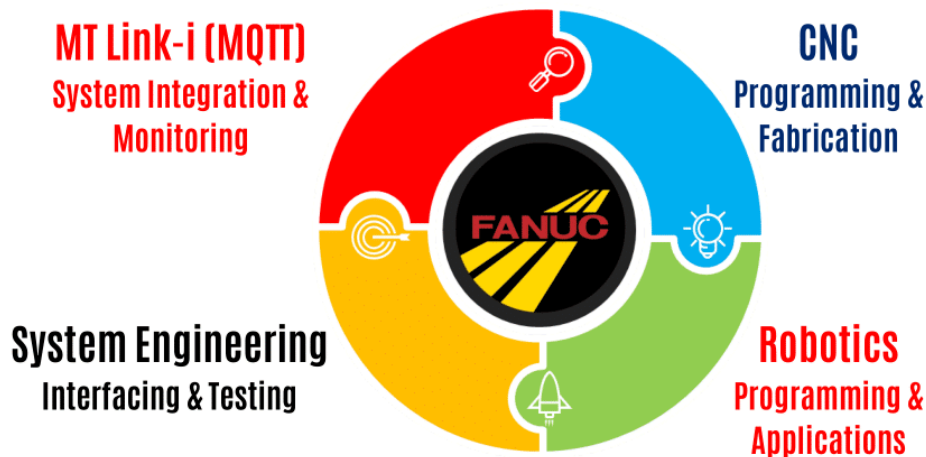
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3. Automation and Robotics RV-CAR

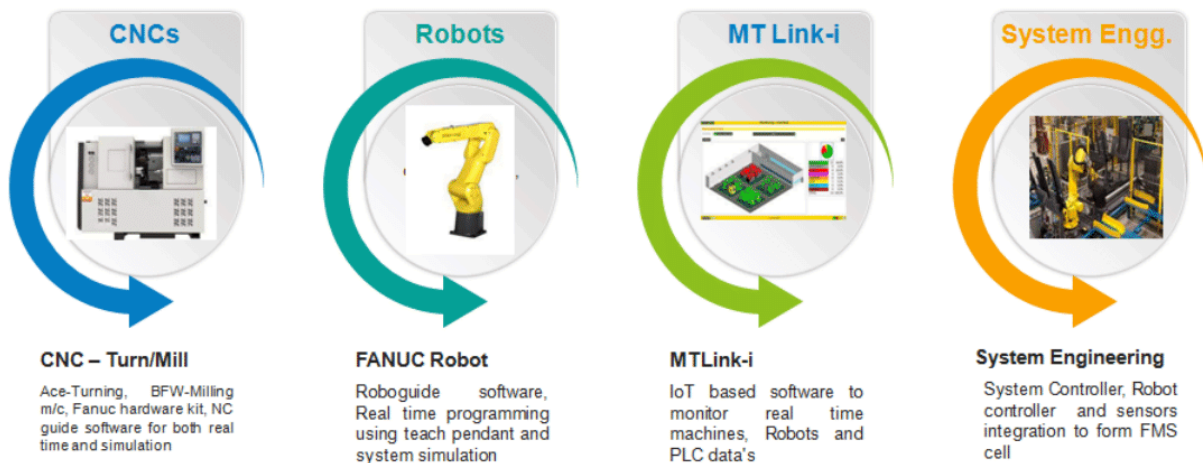
RV - Center of Excellence in Automation and Robotics (RV-CAR) is an interdisciplinary center initiated by the Mechanical and Industrial Engineering Department to train students and faculty members in the area of CNC robotics and IoT. This center provides academic projects, consultancy projects, and FANUC expert support for a better Industrial exposure.

Areas of Expertise

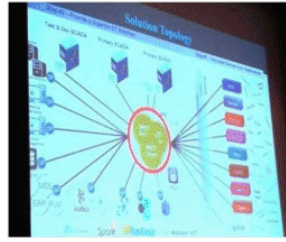


Facility & Infrastructure

The center is well equipped with latest H/w and S/w facilities such as FANUC Robot, CNC Hardware kit, NC guide software, Roboguide software, MQTT IoT software, Production CNC Turning and Milling machines and also system integrated components.



Achievements



Professional Training

Professional training on CNC programming, Robot Programming, IoT and System level integration

Internship

Providing opportunities to students to get industry exposure and corporate culture

Students projects

Supporting academic projects by defining real time projects and involvement of industry experts to execute the same

Consultancy Projects

Opportunities for faculty and students to execute the research related problem execution based on industry inputs

Activity & Research Collaboration

Training

Professional training on CNC, Robot, MQTT and Interfacing

Expert Lecture

Industry experts contribution in covering academic and industry related contents

Consultancy

Consultancy project opportunities to execute real time research problems for students and faculty development



Real time problems and industry support to execute academic projects

Industry exposure to UG and PG students through Internship program

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4. Nanomaterials and Devices

The Centre for Nanomaterials and Devices (CND) at RV College of Engineering, Bengaluru, INDIA, was started in June 2022 to support academic and research programs in nanoscience and nanotechnology. The centre has established a strong collaboration with overseas and national nanomaterials experts in academia and industry. It has the state-of-art facilities in developing nanomaterials and characterization. The focused area of research includes nanomaterials/nanocomposites synthesis for energy, environment, electronics, electrical, telecommunication, mechanical, biotechnology, IoTs, smart devices, chemical and civil engineering applications. CND is also supporting in execution of research and development projects related to nanomaterials and devices funded by various agencies and is providing consultancy services to research institutes and industries. In addition to research, the centre also conducts international/national conferences, seminars, workshops and internship programmes on various themes of nanomaterials.

Areas of Expertise

Nanoscale materials synthesis

Nanomaterials Characterisation

Nanomaterials for Energy, Environment applications

Nanomaterials for Biomedical, sensor applications



Facility & Infrastructure

The center is well equipped with infrastructure and necessary instruments for nanomaterials synthesis and characterization. Centre has two electrochemical workstation instruments for supercapacitor, corrosion, and electrochemical sensor applications.

Autoclave Reactors



Muffle Furnace



Electrochemical Workstation



Achievements

80+ International peer reviewed Journal Publications
50+ Scopus/SCI/Web of science indexed Journal articles
Q₁ articles = 20; Q₂ articles = 18; Q₃ articles = 08;
PhD : 5 (Persuing); PG projects = 30; UG Projects = 20

FOCUSSED RESEARCH AREAS



Activity & Research Collaboration



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5. 5G and Emerging Wireless Technologies

The Center for 5G and Emerging Wireless technologies at RV College of Engineering® was started in September 2022 to support training, consultancy, and Research. The center aims at enhancing knowledge and skill through training. The center focuses on undertaking interdisciplinary research projects through collaboration with industry and research organizations. The center has signed an MoU with the German Academy for Digital Education to provide training for students and faculty to enhance their knowledge in the 5G and Allied technologies.

Technology Trends in 5G



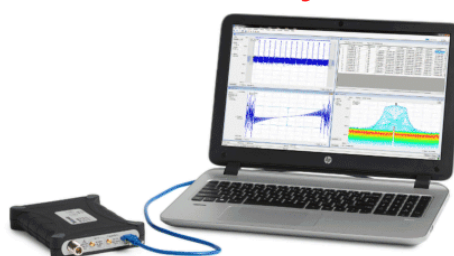
Facility & Infrastructure

The center is supported by MODROB AICTE under the title, Modernization of Advanced RF and Wireless Communication Laboratory with full-fledged testing and characterization of the passive and active circuits for 5G and Allied technologies with a sanctioned amount of Rs.15,97,650.

Mixed Domain Oscilloscope



USB Spectrum Analyzer



Arbitrary / Function Generator



Integrated Research Facility

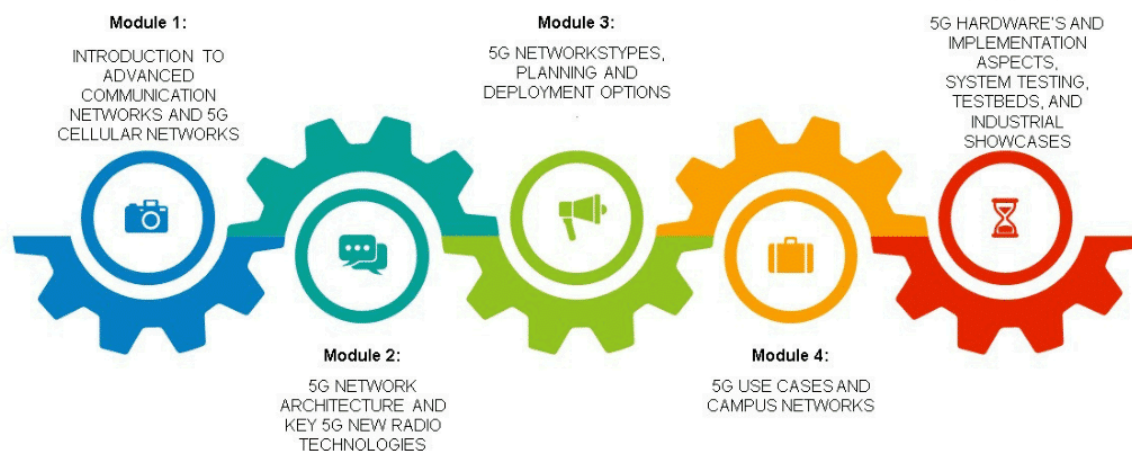


Activity & Research Collaboration



Certification Program on 5G

Collaboration with German Academy of Digital Education (DADB):



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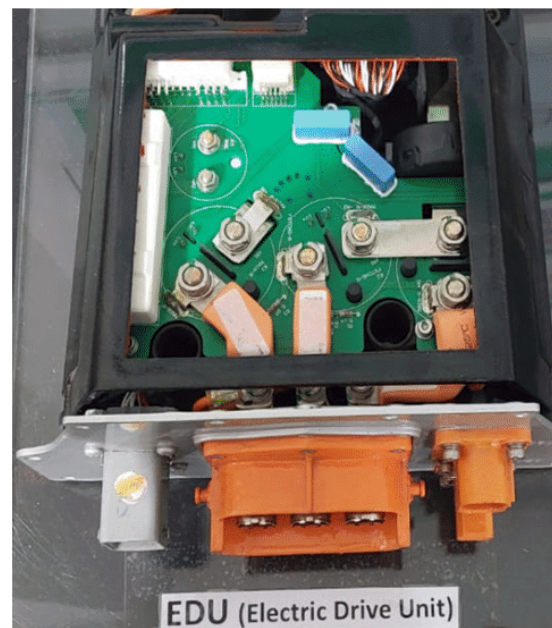
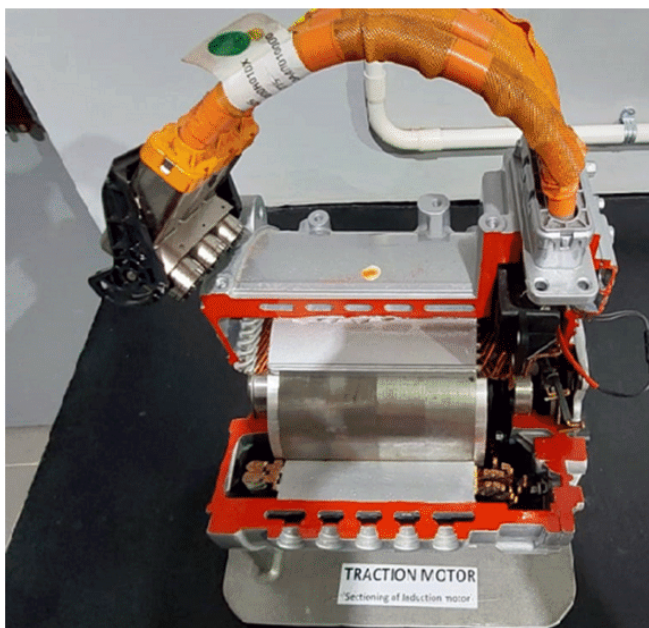
6. Electric Vehicle Technology

RVCE - Morris Garage

The CoC-EV (Centre of Competence in Electrical Vehicle) is a group of passionate students and faculty from RVCE. The group works in association with industry partner MG Motor India Pvt. Ltd., offering career-oriented skill development in EV Technology to cater to the Automobile Industry. The CoC works with the vision *“To provide Quality skill training, professional Knowledge, and employment opportunities in Electric Vehicles domain to the Young Professionals.”*

Facility & Infrastructure

- State of the art Lab facility provided by Morris Garages India Pvt Ltd.
- The centre is supported by MGI with ZS-EV car.
- Practical experiments on high end Morris Garages EV car.
- Regular interaction with experts from Morris Garages to keep abreast of latest developments in industry.



Activity & Research Collaboration

Certification program- MG-RVCE Nurture Program in Electric Vehicle Technology

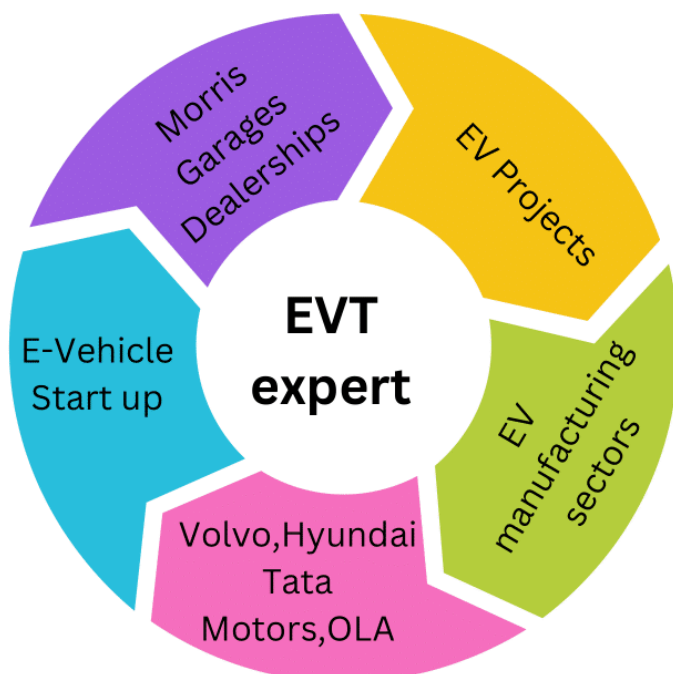
Course Modules



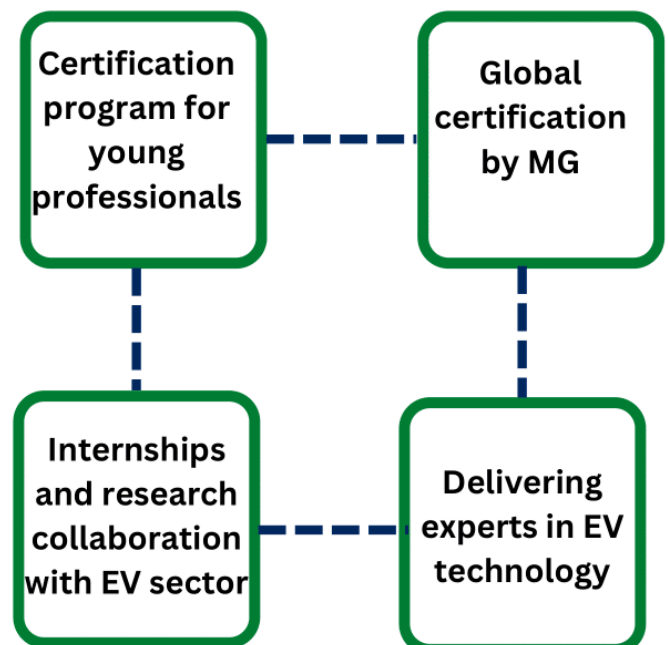
- 1 Introduction to EV
- 2 High/Low Voltage System
- 3 Periodic maintenance
- 4 Connected car

- Extensively trained faculty by Morris Garages India Pvt Ltd.
- Two batches of 20 students per year
- Educated through invited talks/webinars from automotive sectors.

Placement assistance



Milestones



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7. Decibels RVCE - EV Center of Competence

EV COC is established by the Decibels lab at RV College of Engineering with the help of govt. Of Karnataka Elevate 2021 fund, KBITS, department of IT, BT, Govt. of Karnataka.

The aim of COC is to create an industry-ready talent pool for EV sector demands by facilitating Domain-specific, hands-on training programs for students, fresh graduates, faculties & Industry Professionals. And hand-hold technical colleges & universities in assisting/creating courses, Elective subjects, honors, post-graduate diploma programs, master degrees, practical labs & E-learning learning content. Decibels aim to create 100+ COC within 2025 across India and abroad to become the leader in talent Development for automotive industry needs.

Areas of Expertise

Electric Vehicle Powertrain Development

Cell & Battery testing & characterisation



Battery Management System Algorithm Development

Electric vehicle Integration & testing

Facility & Infrastructure

The center facilitates the state of art lab infrastructure to perform cell testing for cell selection, cell behavior analysis, validation of simulation to real-world behaviors, and environmental chamber for studying the cell/pack b/w -20 to +80 Deg celsius and vehicle level testing with a chassis dynamometer for performance analysis and controller tuning.

Cell testing & characterisation lab



Environmental chamber (-20to +80 Deg)



2W chassis dynamometer



Milestones: Student placements



Course offerings at COC

1. Certification Course (3 Days)

1.1 Electric Vehicle Engineering

2. Educational Internships (4 Weeks)

2.1 EV Powertrain Modeling

2.2 Li-ion Cell & BMS Algorithms Modeling

2.3 Motor Controls

3. Micro-Specialization / Pre-Master Courses (3-Month)

3.1 EV Powertrain Design

3.2 Li-ion Cell & BMS Algorithms

3.3 EV CAE

4. Master Courses (9-Month)

4.1 Electric Vehicle Powertrain Design & Validation

4.2 Battery Management Algorithm Development

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8. RV-Toyota Kirloskar Centre of Competence In Automotive Engineering: The RV-Toyota Centre of Excellence established in 2017-18. It offers interactive models of Innova engines, transmission, and power trains, along with diagnostic boards for engine subsystems. The center provides students with internships and skill development opportunities, enhancing practical training and opening up career prospects

9. Safe, Sustainable And Smart Infrastructure (3S) aims to create a 3S infrastructure ecosystem, focusing on interdisciplinary research and development, fostering human resources, and advancing Sustainable Development Goals. Ongoing projects include post-implementation road safety appraisals and research on pavement markings' retroreflective properties, funded by various sources.

10. Centre for Health Care Technology Research: The center at RVCE is at the forefront of innovation in technology and health devices. With projects like osteoporosis estimation and fingertip blood pressure monitoring, it focuses on accessible health diagnostics. Notable accomplishments include a patented human fall detection device and a stair-climbing exoskeleton for mobility issues. Research on occupational stress, like the study on Bangalore police, adds valuable insights into workplace health. RVCE's center is a leader in technological advancement and health solutions.

11. Center for Smart Vidyuth & Sustainable Solutions: has been established to align with the goals of SDG7, aiming to enhance energy efficiency, resilience, and sustainability for the betterment of both people and the planet. Its activities include programs such as the Urja Energy Swaraj Club, workshops, training sessions, seminars, skill development projects, internships, research endeavors, and collaborations. It also facilitates various student-centric techno-cultural and societal activities, offers certification courses, and focuses on initiatives like smart lighting and energy solutions. Additionally, the center is committed to promoting sustainable solutions through initiatives such as smart energy meters, home automation, establishment of a smart energy campus, and installation of electric vehicle charging stations.



RV College of
Engineering®

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