FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

Programme: **Bachelor of Technology (Automobile Engineering)**

Semester: **VIII**

Course Code: **202010802**

Course Title: **Automotive Painting and Collision Repair**

Course Group: **Professional Elective Course-V**

Course Objectives: The course is intended to understand the use of hand and power tools, techniques and metal working, body preparation, plastic fibers, fiber glass, SMC repair, sending and application of primers with emphasis of shop safety measures**.**

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Internal		External		Total
Lecture	Tutorial	Practical		Theory	J/V/P*	Theory	J/V/P*	
3	0	2	4	50 / 18	25 /9	50 / 17	25 / 9	150 / 53

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	**Painting techniques & Automobile Paints:** Definition, objectives of painting, painting techniques, topcoat refinishing, elements of paint, pigments, resin, solvent, paint drying, paint drying characteristics, drying forms, film mesh works. Different types of paints, topcoat paint, special paint, painting method, spraying, immersion, painting new vehicles, body components, global refinish system, HVLP recommendations, sanding recommendations, wet sanding, dustless dry sanding, vehicle protective coating, unpainted surfaces, filling dented or irregular surfaces.	5
2	**Painting Equipments:** Refinishing facilities, equipments, tools, repainting process, refinish & OE paints types, individual characteristics, painting & drying facilities, drying equipments, color matching scales, air spray gun, electrostatic painting equipment, accessories, types of paints, repainting process, spray gun, surface treatment, primer surface & sanding, fundamental of color, match masking, top coat process, whole body & block repainting, spot repainting, waxing, repainting of bumpers, metallic colors appearance charger due to painting conditions.	12

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3	**Paint Defects and Causes:** Paint defects, causes & correction, small body paint repair, correction for paint finish defects, defects during painting, seeds fish eyes, orange pills, runs, brushing, shrinkage, bleeding, line holes, pretty traces, abrasion mane, blisters, peeling, spotting discoloration, chalking, yellowing, nibs and loss of gloss. Repairing a hall smart dart, defect occurring with time.	**12**
4	**Paint Selection:** Paint mixing system, OEM color selection process, paint codes, tints, mixing, paint mixing, single stage and multistage painting, two stage paints, troubleshooting and painting of plastic parts, flexible paint adhesive, painting new plastic parts, repairing plastic parts, compressed air supply system, air & fluid control equipments, hose and connections, hose system maintenance.	**8**
5	**Health Effects & Safety:** Safety and cleanliness of minor body repair, paint, solvent and its toxicity and its prevention, five hazards, fire extinguishing, health and safety of organic solvent, heavy metals, acute chronic effects, respiratory sensitization, skin and eye effects, stability of isocyanine, storage, incompatibility, hazardous decompositions, body filters, door dig repairs, scratch repair, drip repair.	**8**

List of Practicals / Tutorials:

1	To demonstrate knowledge of correct paint application techniques and be able to identify paint problems along with troubleshooting.
2	To study different types of paints and their characteristics used in painting process.
3	To demonstrate proper paint shop equipment and pre-paint preparation steps such as proper final sanding, masking, buffing, and detailing.
4	To demonstrate paint booth used for automobile painting
5	To evaluate of refinishing process involved in automobile painting.
6	To acquire knowledge on the use of basic auto body hand and power tools, application and finishing of body filler materials and undercoats.
7	To demonstrate scratches, dents and its removal process
8	To signify paint selection, paint mixing and paint codes involved in painting process.
9	To illustrate of various precautions must be taken while painting.
10	To demonstrate the use of computer colour matching systems and the use of tinting solid and metallic colours.

Reference Books:

1	Automobile Paint Techniques by Anil Chikara, Satya Prakashan, New Delhi
2	Painting for Collision Repairs by Michal Crendell, Delmar Cengage Learning; 1st edition (November 11, 1998)
3	Pro Paint and Body by Jim Richardson, HP Trade, Ist Edition
4	How to Paint Your Car by Denims Parki, Motorbook

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5	The Repair of Vehicle Bodies by Andrew Livesey & A.Robinson, Taylor & Francis Ltd

Supplementary learning Material:	
1	NPTEL Resources.

Pedagogy:

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment

Internal Evaluation :

The internal evaluation comprised of written exam (40% weightage) along with combination of various components such as Certification courses, Assignments, Mini Project, Simulation, Model making, Case study, Group activity, Seminar, Poster Presentation, Unit test, Quiz, Class Participation, Attendance, Achievements etc. where individual component weightage should not exceed 20%.

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks						**R**: Remembering; **U**: Understanding; **A**: Application, **N**: Analyze; **E**: Evaluate; **C**: Create
R	**U**	**A**	**N**	**E**	**C**	
25	25	25	5	5	10	

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Understand various painting techniques and importance of automobile paints	10
CO-2	Understand the different painting equipments and their use.	25
CO-3	Understand the several paint defects and their causes	25
CO-4	Understand different paint selection techniques used for painting	20
CO-5	Understand the importance of health and safety while painting	20

Curriculum Revision:	
Version:	2
Drafted on (Month-Year):	June-2022
Last Reviewed on (Month-Year):	
Next Review on (Month-Year):	June-2027

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