

MIA SCHOOL OF RACE MECHANICS

Race Car Mechanic

4 February 2019 – 15 February 2019

COURSE SYLLABUS

The Foundations of Motorsport

- Types of racing cars (Vehicle/Chassis, Types)
- Racing Categories
- Sporting regulations
- Role of the mechanic during the race event

The Workshop – Equipment & Measurement tools

- Measurement tools, check routines, threading and fixings
- Tooling use and storage
- Tooling set up and introduction to workshop bench
- Maintenance
- Garage improvements & Health & Safety

The Car

- Identification and Function of Components

Suspension & Car Set Up

- Overview
- Steering
- Suspension types
- Function
- Wishbones
- Rod ends,
- Ball-joints
- Bushes
- Spacers
- Camber
- Castor
- Toe-in, toe-out
- Wheels & Tyres
- Pressures, gauges
- Dampers
- Springs
- Anti-Roll bars

Equipment

- Nuts & Bolts
- Torque settings
- Threadings & fixings
- Securing – Loctite, locking wire

Internal combustion Engines & Ancillaries

- Engine Types
- Exhaust systems
- Turbos
- Cooling systems
- Fuel systems and tanks
- Plumbing
- Aeroquip
- Supercharging



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Driver position

- Driving positions
- Safety systems
- Custom single-seat/kart seat manufacture
- Driver Comfort
- Seat Belts
- HANS Instruments

Cockpit

- Wiring Looms
- Fire Extinguishers

Braking systems

- Function
- Types of braking systems
- Discs and pads
- Hydraulic assembly
- Bleeding best practices
- Maintenance

Tyres & Car set Up

- Types of racing tyres
- Effect of temperature and pressure on car set-up
- Front and rear geometry
- Set-up tuning
- Set-up tools
- Car set-up on ramp

Transmission

- Introduction to transmission components
- Gearbox types
- Ratios
- Dog rings
- Maintenance
- Limited-slip differential
- Driveshaft and prop shaft
- Universal couplings
- Clutch

Rally Cars

- Differences
- On the stage
- Introduction to rally cars
- Drivers and co-driver
- Workshop methodology
- Service park
- WRC technical analysis
- Rally tyres

Electric vehicles

- Safety, charging, maintenance



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Welding

- Types of welding
- MIG welding
- Machining
- Fabrication
- Cutting
- Grinding
- Practical experience

Factory & Practical visit

- Manufacturing
- Types
- Set-up
- Fabrication
- Composites
- Engine build

Pit Stop Management & Training

- Racetrack activities responsibilities
- Set-up
- Pit wall set-up
- Check lists
- Teamwork
- Set up ramps
- Air bottle management
- Maintenance and practical exercises



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