PARKLAND COLLEGE

Course Information Form (CIF)

Course Code: AFD 298

Course Title: Motorsport Chassis Analysis

Department: Applied Sciences and Technologies
PCS Code: 1.2 - Occupational/Technical Instruction
CIP Code: 47.0604
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 2-6-5
Credit Hour Distribution:

Lecture: 2	Lab: 6	Clinical: 0	**Total: 5**

General Course Information

Catalog Description

Application of typical motorsport chassis design, assembly of manufactured frames, and selection of components into a completed chassis for motorsport competition.

General Course Objectives

Students will be taught motorsport chassis design analysis, component selection, and assembly practices.

Minimum Placement Levels

English	Reading	Math
Placement into ENG 098	Placement into CCS 098	Placement into MAT 060

Prerequisites

Credit in AFD 297

Methods of Evaluation

The minimum number of evaluation methods will include: 2 practical exams and 1 project portfolio.

Instructional Materials and Additional Supplies

None.

Course Content

General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Chassis Design	1. Analyze structural design of an existing chassis. 2. Evaluate the adequacy of design for the specific application based on sanctioning organization rules and regulations.	5	2	0
Driver Enclosure and Controls	1. Identify proper location and construction of driver enclosures as required by relevant sanctioning organization rules. 2. Design appropriate locations for driver controls. 3. Analyze need for driver ventilation and apply to chassis as required. 4. Assemble driver controls according to functional and ergonomic constraints.	3	5	0
Suspension	1. Assemble front and rear suspension sub-assemblies from supplied components per manufacturer specifications. 2. Distinguish between various types of suspension systems: 1) Rear suspension: leaf, coil, coilover, 3-link, 4-link, and z-bar; 2) Front suspension: short long-arm, coil, coilover, and strut. 3. Evaluate the advantages and disadvantages of the various suspension types based on desired handling characteristics.	4	18	0
Fabrication	1. Identify appropriate methods for fabrication of brackets and accessory mounts in compliance with sanctioning organization rules and guidelines. 2. Bend, notch, and fit tube steel for chassis component fabrication. 3. Identify proper sequences of body construction and installation, including fabrication of interior panels using sheet metal brakes and hand shears. 4. Assemble body panels and fashion supports, and attach to chassis in compliance with sanctioning organization technical inspection guidelines.	3	18	0
Steering	1. Analyze differences and distinguish benefits between parallelogram steering systems and rack and pinion systems for motorsport applications. 2. Assemble and install steering systems modified for motorsport applications chassis in compliance with sanctioning organization's technical inspection guidelines. 3. Differentiate the advantages between available stock replacement component pumps and lines and modified after-market components. 4. Measure steering gear ratios. 5. Calculate bump steer.	3	18	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Brake Systems	1. Examine motorsport brake caliper mounting. 2. Analyze and document the benefits of multiple master cylinder applications. 3. Calculate brake system pressure and volume requirements. 4. Evaluate various methods used for brake bias adjustment. 5. Compare various methods used for brake shut off valves and proportioning valves. 6. Differentiate between performance brake fluid and standard Department of Transportation (DOT) fluid. 7. Assemble and install brake system components for motorsport applications chassis in compliance with sanctioning organization's technical inspection guidelines.	3	10	0
Plumbing	1. Identify various fluid and vent lines required for motorsport applications. 2. Construct fluid lines for fuel, oil, brake, coolant, and venting systems. 3. Evaluate the need for braided steel lines compared to synthetic or rubber lines. 4. Evaluate the need for line mounting, abrasion resistance, and heat protection. 5. Construct fluid and venting lines for motorsport applications. 6. Install, route, and protect fluid lines from abrasion. 7. Analyze potential damage from impact and vibration.	3	6	0
Electrical Wiring	1. Review basic automotive electrical theory. 2. Classify wire gauge requirements based on calculated amperage flow. 3. Analyze requirements for electrical circuit protection. 4. Evaluate need for auxiliary power terminals for starting and charging. 5. Assemble wiring systems for starting, charging, ignition, lighting, and data acquisition. 6. Locate and install storage battery and master cut off switch.	3	8	0
Safety Systems	1. Analyze the needed safety system requirements based on motorsport association requirements. 2. Assemble driver safety restraint systems based on guidelines set forth by sanctioning organizations. 3. Install driver restraint systems, window netting, and roll cage padding. 4. Analyze fire suppression systems. 5. Examine driver personal safety requirements for driver suits, gloves, helmet, neck brace, and shoes. 6. Determine personal safety equipment rule compliance based on age of safety equipment.	3	5	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	90	0