

Competition Driver Training – Student Outline

This Outline contains two parts.

The first is a list of the Student Performance Objectives (SPOs) for this course. Those are the knowledge and skills that the course graduate must be able to demonstrate correct knowledge of or to be able to perform correctly in order to be licensed. Those are the areas of knowledge on which you will be tested and on which you must show comprehensive ability and/or understanding.

The second portion is the course curriculum/schedule that will be followed during the course.

Student Performance Objectives

These are presented in the format of task – conditions – standards. The **task** specifies the skill or knowledge that the driver must demonstrate, the **conditions** specify the physical situation under which the driver must perform the task correctly or the manner in which the task will be presented to the student driver, and the **standards** specify correct, satisfactory student performance.

Student Performance Objective (SPO) 1 – SWMS On-track Philosophy/Values:

(Task) The student will demonstrate their understanding of SWMS' philosophy and values concerning no contact between vehicles or barriers during on-track activities,

(Condition) given an oral or written question or series of questions,

(Standard) the student will indicate full understanding to the satisfaction of the testing instructor.

SPO 2 – Track Marshal flagging and communication:

The student will demonstrate, by oral or written responses, their understanding of the meaning to them, as a competitor, of flag signals, including the action for them to take,

given written or oral questions accompanied by flag graphics or display of actual flag signals,

the student will demonstrate their understanding of all flag signals to the satisfaction of the testing instructor.

SPO 3 – Driver hand-and arm signals:

The student will demonstrate, by oral or written responses, their knowledge of hand-and arm signals used by drivers during on-track sessions to communicate with other drivers (e.g., while yielding to be passed or when exiting the track) as well as signals to communicate with track marshals in adverse situations (e.g., driver status or needs),

given written or oral questions,

to the satisfaction of the testing instructor.

SPO 4 – Pre-race actions and grid:

The student will describe all required pre-race actions and expected driver actions at the grid and during the warm-up lap,

given written or oral questions,

to the satisfaction of the testing instructor.

SPO 5 - Safe, successful Race Starts:

The student will demonstrate or describe a successful SWMS race start, preferably by practical demonstration on-track from a position back in the starting “pack”; alternately by oral questioning,

in which the student will not accelerate to start until the green flag is waved and will negotiate all corners while the “pack” is close with no contact with other cars, to the satisfaction of the testing instructor.

SPO 6 – General competition driving techniques:

The student will demonstrate and describe the optimum line through any turn, the basic technique of brake/turn/accelerate, and effective situational awareness of other vehicles

by practical demonstration on-track as well as by description to an instructor, to the satisfaction of the testing instructor.

SPO 7 – Passing and Being Passed:

The student will demonstrate expected actions prior to and during passing when overtaking another vehicle, as well as when being overtaken by another vehicle,

preferably by practical demonstration on-track or alternately during oral questioning by an instructor,

to the satisfaction of the testing instructor.

SPO 8 – Actions in case of Accidents and other untoward events:

The student will demonstrate or describe correct and complete driver responses to spins or off-track excursions, collision with another vehicle or a barrier, and encountering an accident by another participant;

preferably by practical demonstration on-track; alternately in response to oral questioning;

to the satisfaction of the testing instructor.

Course Curriculum/Schedule

Task/Skills that a Licensed Competition Driver must be able to explain or demonstrate shown in green (with related SPOs identified).

I. SWMS Race Philosophy/Values (See SPO 1)

- Courtesy
- No trophies - No winnings
- Safety first! Any unsafe driving will not be tolerated.
- No car-to-car contact or car-to-wall contact
- 13/13 rule
- Have fun!!!

II. Race Weekend Procedures

A. Registration and signing of waiver WHEN you arrive.(SPO 4)

- Makes you eligible for excess medical
- Necessary for public liability policy

B. Rules in the Pit

- Use only space you need
- Be “neighborly” to your fellow members
- LOW SPEED (5mph)
- Control of animals and kids
- NO alcohol, etc.

C. Drivers meeting

- What’s discussed at a driver's meeting
- Mandatory for ALL drivers (SPO 4)

D. Position in Vehicle

- Feet and legs allow full range of pedal motion
- No contact of legs and bottom of steering wheel
- Hands at 9-10 and 2-3
- Approx. 90 degree bend at elbows

E. Grid (See SPO 4)

- Location of grid
- Driver/entrant responsibility to be there
- Driver/entrant responsibility to be safely prepared to enter track.

All equipment on and TIGHT!

- Acknowledge 5 minute countdown with hand signals.

F. Entering track

- Get brain alert and operating
- Where, what speed, check flags, purpose of warm-up lap
 - ✓ Re-Check gear: belts, helmet, gloves.
 - ✓ Re-Check vehicle: gauges (gas, oil, temp), hood, mirrors, interior for loose items.
 - ✓ Verify any repairs are correct.
 - ✓ Test brakes
 - ✓ Warm up transmission, etc.
 - ✓ Determine condition of track - identify dirt, debris, oil, skidmarks, potholes, etc.
 - ✓ Locate corner worker stations (See SPO 4)
 - ✓ Who's in front of you (with enough room); who's behind.
- IF YOU'VE GOT A PROBLEM, RAISE YOUR HAND. MAKE SURE YOU'RE CLEAR OF OTHER TRAFFIC. GET OFF THE RACING LINE AND OFF THE TRACK. (See SPO 4)

G. Flagging — ALWAYS OBEY ALL FLAGS (See SPO 2)

- Purpose is for communication and control of the safe operation on the track.
- Review meaning of all flags.
- NEVER pass on yellow, warm-up, or cool-down laps.

H. Exiting track

- Where - at end of grandstands
- Raise hand, slow down. KEEP all safety equipment intact.
- Pull off track surface.

III. Basic driving principles with single car

A. Concentrate!

B. Be alert. but don't be TENSE!

C. Look well in front of car - not just beyond the hood!

D. Some definitions:

- The racing "**line**" - the fastest way around the track: uses the longest section of a straight and the largest radius of a turn.
- Turn: Translates forward motion to lateral motion smoothly.
- Apex, or clip point — closest point to the inside of turn.
- Understeer or 'tight' - more steering input required during turn

Can result in 'plowing' straight off the course

- Oversteer or 'loose' - less steering input required during turn

Can result in a spin

E. BE SMOOTH — minimize the number of steering, braking, and throttle inputs.

F. Be Prepared to use ALL the track CORRECTLY

- Not to block
- To maximize radius of turn
- To straighten out the “S” turns

G. Straights

- Importance of straights:
- Setting up next turn
- Place to pass
- Chance to look at gauges
- Check mirrors for overtaking traffic.

H. Braking

- DO NOT DOWNSHIFT TO BRAKE.
- Locate braking point with a landmark.
- Apply maximum braking (Threshold BEFORE wheels lock) in a straight line as you approach end of straight.

I. Turns (See SPO 6)

- Turns separate straights.
- Prepare for a turn by braking, shifting, then turning.
- Anatomy of a turn: entry, apex, exit
- Optimum is only one steering input, not seesawing the steering wheel
- What happens if you go in too fast? You will miss the turn and slide off the track.
- What happens if you turn too early? One turn will become two.
- What happens if you turn too late? Turn becomes sharper and therefore slower.
- Try for the closest, on track, apex. Use a landmark to locate the point.
- Begin to accelerate smoothly as you pass the apex and remove the steering input.

J. Sandia Motorsports Track Discussion & In-Car Video

- 14 Turns
- Straights
- Hairpins
- Run-off areas & Walls

IV. Discussion of you WITH other cars on the track.

A. BE ALERT!!!!

B. At ALL Times know who is in front of you, along side you, behind you, coming up on you, leaving you, etc. (See SPO 5, 6, and 7)

- Use eyes, ears, mirror
- Think

- ANTICIPATE

C. STARTS (See SPO 5)

- The race does not start until the green flag is waved, NOT at the exit of the final turn. Stay in the starting alignment until the flag is waved.
- At our tracks, the first turn is the location of the highest risk for collision with the wall or other vehicles. So the way to survive that risk is for all drivers to exercise maximum caution and awareness of other vehicles. While approaching and going through the first turn, avoid jinking left or right and diving toward the inside of the turn. Unless you are the person with that single high-powered vehicle that qualified at the front and can accelerate away from all other vehicles (that is, nearly all drivers), a successful SWMS race start requires all drivers to behave as a team through all corners while cars are in a pack, rather than diving aggressively for the inside line. Don't try to make you and your car do what was never accomplished before, i.e., out-accelerate a Cobra with an MG ... or out-brake it.

D. Passing/being passed - Be courteous (See SPO 7)

- Let the obviously faster car by - point to the side you wish to be passed.
- Don't race the passing car to the corner, let up to let them by, then resume racing.
- When overtaking, you are responsible. Pass cleanly, with room to spare.
- If the driver being overtaken does not signal for you to pass, be aware that the driver might not be aware of your actions.

E. Drive predictably - on the "Line" every lap.

V. Advanced Techniques

A. Lap times relate to most distance covered in least amount of time - SMOOTHLY.

B. Practice, practice, practice

C. Learn the car and its "quirks"

D. Adjust tire pressures

E. Brake later and harder (BUT SMOOTHLY), with quicker shift keeps top speed longer.

F. Turn smoothly, scrubbing less speed.

G. Accelerate sooner in turn. (See SPO 6)

- Correct line means - higher average speed.
- Braking later means higher speed longer – higher average speed
- Earlier acceleration means - more speed out of the turn.

- More speed out of turn means - more speed at end of straight
- More speed on straight = lower lap times.
- Accomplish this by “trail braking” transitioning into earlier acceleration.

H. Adjust for changing conditions

- At beginning, cold tire tread means less adhesion.
- Cold track has less adhesion.
- Warm tire tread increases adhesion.
- Hot tires inflate pressures and lose adhesion.
- Brakes may fade as they heat up.
- Braking may be reduced as fluid heats up.
- Wet track is slippery.

I. Set attainable goals

- Drive each turn better than the last turn
- Drive the next lap better than the last one.
- Drive within your limits so that you SAFELY finish ... the session. the day, the event, the season.

J. Accidents or other untoward events (See SPO 8)

- Spins and off-track excursions – If you spin, either on or off track, without colliding with a barrier or vehicle, you may continue on. Ensure that re-entry to the track after the spin is executed in a way to avoid all other vehicles. Exit the track into the paddock, and proceed to grid for inspection by a tech. inspector.
- If you observe an accident ahead of you, of course, avoid it if possible. If you pass it safely, watch corner stations for flag signals (e.g., yellow, red, or debris).
- If you are involved in a collision, pull off the track if possible. **DO NOT EXIT YOUR VEHICLE UNTIL DIRECTED TO DO SO BY A TRACK MARSHAL.** Use appropriate hand-and-arm signals to indicate your situation and needs to the nearest corner station.
- Once the race is terminated, track marshals will assist with recovery of your vehicle. You may be directed to see the Race Steward concerning the accident.

VI. Instructor assignments

VII. Saturday -

- *(After Driver's meeting) Review SWMS philosophy*
- *Review Flags*
- *Van Rides*
- *Session 1 - Follow the leader, learn the line*
- *Session 2 - Threshold braking on front straight*
- *Session 3 - Laps with limited passing on straights only*
- *Session 4 - Laps with limited passing*

VIII. Sunday

- *After Driver's meeting, Review*
- *Session 1 - Laps with limited passing*
- *Session 2 - Laps with limited passing*
- *Session 3 - Laps with limited passing*
- *Session 4 - Practice starts - race cars only*