



Adverse Driving Conditions

Session Goals

1. Identify techniques to see and be seen by other drivers in adverse driving situations.
2. Determine different driving environments factors that reduce traction.
3. Identify evasive steering and braking actions that a driver can take under conditions of limited traction.
4. Identify vehicle maintenance issues that correspond to different seasons.
5. Identify vehicle technology that will assist in traction and steering control.
6. Identify seasonal equipment to keep in vehicle throughout the year.

Key Vocabulary and Topics

- ABS
- Accelerator failure
- All wheel drive
- Brake failure
- Collision reporting
- Cornering
- Counter steer
- Dash dimmer control
- Engine failure
- ESC (Electronic Stability Control)
- ESP (Electronic Stability Protector)
- Evasive action
(steering and braking)
- Fishtailing
- Front-wheel skid
- Glare recovery
- Hydroplaning
- High beam/low beam

Key Vocabulary and Topics

- Map light
- Moth syndrome
- Off road recovery
- Overdriving headlights
- Power steering failure
- Rear mirror/night adjustment
- Rear-wheel skid
- Reduced visibility risks
- Rocking the vehicle
- Rumble strips
- Sight distance rule
- Skidding
- Tire blowout
- Tire footprint
- Traction

Choices and Consequences

1. How do attitudes, emotions, beliefs and values interfere with safe driving?
2. What healthy attitudes and behaviors support a safe driving environment?
3. How do unhealthy attitudes and behaviors result in physical and mental impairment?
4. What physical and mental conditions interfere with safe driving?
5. What are the differences between impulsive and calculated risks?
6. What are the differences between aggressive driving and road rage?

Brainstorm

- As we drive, there are a number of environmental conditions that we will encounter where we will not only need to see other drivers, but also be seen by other drivers.
- Let's brainstorm different environmental conditions you might encounter and how they could affect your ability to safely operate your vehicle.



Did You Know?

- According to the National Safety Council, traffic death rates are up to three times greater at night than during the day.
- Driving at night is more dangerous because 90% of a driver's reaction depends on vision.



What are your eyes naturally attracted to in this picture?

The lights?

We call this the “Moth Syndrome”



Visual skills such as depth perception, color recognition, and peripheral vision are limited at night. Can you identify the color of these cars?

Which ones are closer or farther away? Can you see the pavement markings ahead?



Don't stare into the lights of an oncoming vehicle. Rather focus to the right while at the same time seeing what is to the left by using your side vision.

Try it now with this picture. Look to the right side of the road but use your side vision to maintain information to the left.



Another factor adding danger to night driving is fatigue. Fatigue is dangerous. If you are tired when driving, you are slower to react and are not as aware as you should be. Simply, your judgement will be impaired.

Who is at most risk to drive while fatigued?



At night, side vision is greatly reduced and it is difficult to determine speed of vehicles just by looking out into the intended path.

Can you think of some things that can help you see better at night?

At night, side vision is greatly reduced, and it is difficult to determine speed of vehicles just by looking out into the intended path.

Can you think of some things that can help you see better at night?

1. Make sure your windshield is clean inside and out
2. Make sure you do not have cloudy headlights
3. Look around. Don't stare in a single direction
4. Don't drive faster than your headlights allow you to see
5. Don't blind other motorists by driving with your high beams on all the time
6. Maintain a larger following distance behind vehicles 5-6 seconds
7. Don't wear sunglasses at night

Check your lights to make sure they are working. To check, pull up to a garage door or building wall and flash them on and off.



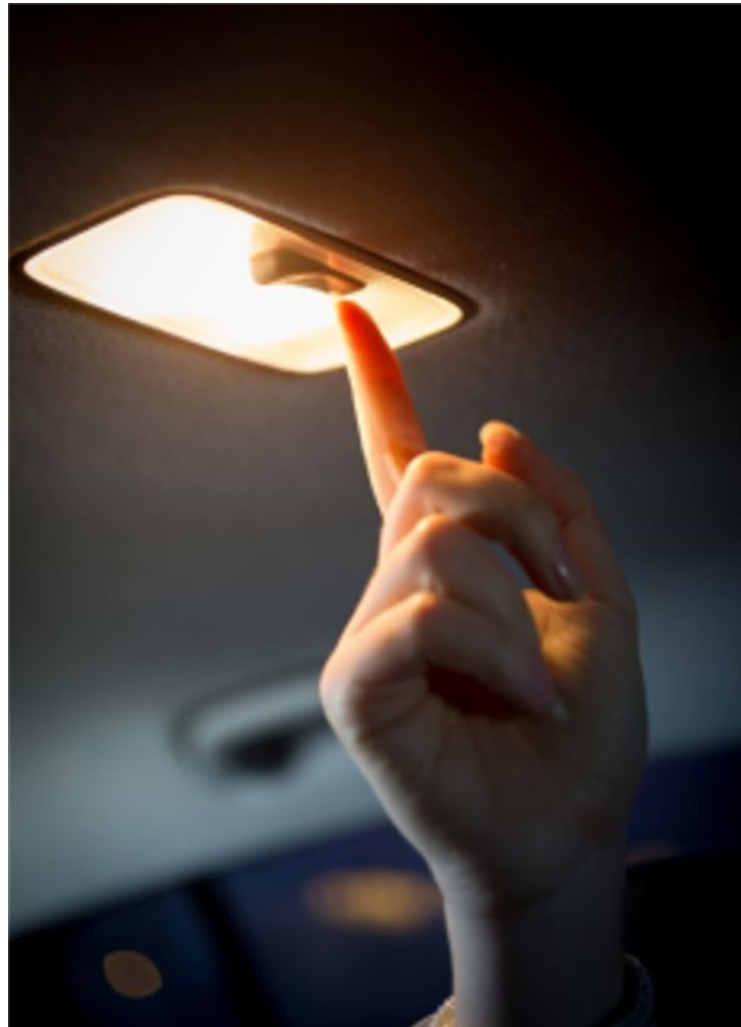
Driving at Night-Special Considerations

- To avoid being blinded by oncoming high beam lights, look ahead and towards the right shoulder of the road using your side vision to stay on track.
- Use your high-beam lights when driving in rural areas and on open highways away from urban and metropolitan areas.
- If you are driving with your high-beam lights on, you must dim them at least 500 ft. from any oncoming vehicle so you don't blind the oncoming driver.
- Remember to use your low-beams if you are within 200-300 ft. of the vehicle you are following to avoid blinding the driver ahead of you.

Why is it important to adjust your dashboard lights?



Avoid using your interior lights or do so in areas of little to no traffic so your eyes have time to readjust to the darkness.



If you have car trouble at night, pull off the road as far as possible, turn on your hazard lights.

There is always a risk when getting out of your vehicle given that you are so close to oncoming traffic. Be very careful and don't linger close to the moving traffic lane.

Set out flares or reflective triangles, well behind your vehicle, to warn drivers of your emergency position off the road.



Let's review New York State restrictions regarding night driving for those with a junior license.

Identify, List, and Discuss: Special Factors to Consider for Residential Streets

- Alternate street parking problems
- State of emergency parking
- Snow drifts near driveways/intersections
- Slippery intersections due to puddles and leaves clogging drainage
- Slippery intersections due to freezing sections of the road where vehicle heat melts the snow and it turns to ice
- Salted intersections in winter makes for loose gravel in Spring
- Low driving areas such as viaducts can flood

Identify Different Weather Conditions

As a group, develop a list of the different weather conditions a driver will encounter.

Having clean windows – inside and out; nothing hanging from your mirror and keeping the dash free of papers/items eliminates reflections.

Unobstructed windows in the front, the rear, and on the side windows is very important for good visibility.



Sunny Days

Glare can reduce visibility in different ways.

Looking at the pictures to the right, you see that both days are sunny, but the days are in different seasons. What could you do to minimize the glare of the sun?

Did you know

The two most dangerous times of the day to drive are sunrise and sunset!



Fog

Why is fog dangerous? What should a driver do?



Rain

Why is rain dangerous? What should a driver do?



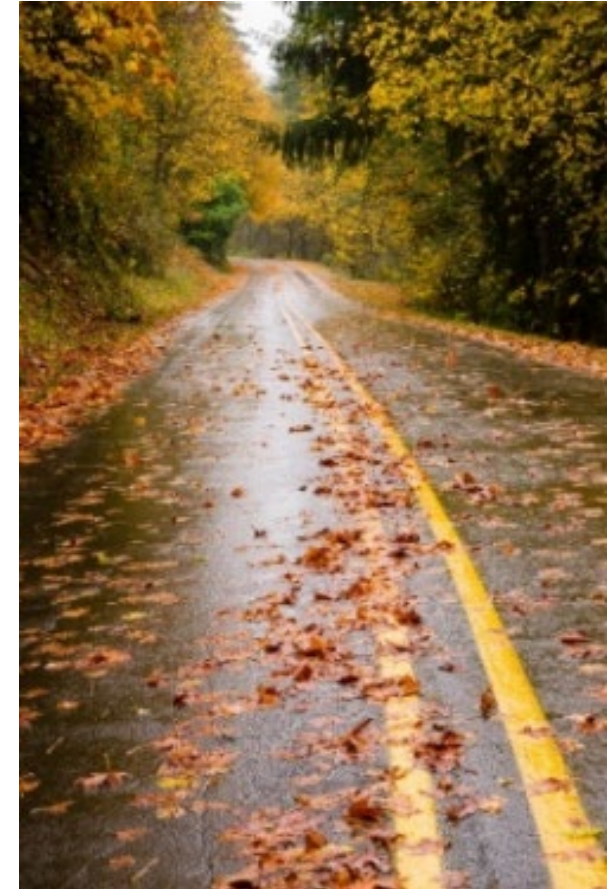
Reduced Traction

Traction is reduced on wet, snow, and iced roads.

Hydroplaning

- Think of it as water skiing while driving
- No ability to steer, brake, or stop
- Don't hit brakes, but instead lift foot from accelerator

Remember that wet leaves on the road can lead to especially slippery road conditions.



Downed Power Lines

Storms can lead to downed power lines

- Never drive over a downed power line or anything in contact with them.
- If you are in a vehicle that has come in contact with a downed power line, stay in the vehicle and call 9-1-1, unless you see fire or smoke.
- If you are forced to leave the vehicle because of fire or smoke:
 - Stand on the frame of the car and jump to the ground ensuring both feet land on the ground at the same time, while clearing the car (don't hold on to the car)
 - Shuffle your feet closely together ensuring that you don't have any space between your feet with each shuffle. Take your time!
 - Move more than 35 feet away from the vehicle

Flooding

Never drive through deep water. What should you do when roads are flooded?



Snow, Ice, & Cold Weather

What makes driving in these conditions dangerous? What should drivers do?



Why do bridges often freeze first during the winter?



It is best to avoid driving in deep snow. How can you be prepared in case you get stuck in the snow?



True or False

1. T Rain covered roadways create limited traction.
2. F Use cruise control on slippery roads for control.
3. T Increase following distance from other vehicles.
4. F Use high-beams headlights to increase visibility to others.
5. T Roads are most slippery when rain starts to fall.
6. T You should drive in the tire tracks left by other vehicles.
7. F Bald tires reduce the chance of hydroplaning.
8. T A sign that the brakes are wet is the vehicle pulls to one side.
9. F Estimate water depth by looking at parked vehicles.
10. F If the windshield wipers must be used, turn off the headlights.

Evasive Actions

- Use when encountering emergency events like skidding and vehicle failures
- New technology assists with vehicle control

Evasive Steering

- Steering around an obstacle is preferred to braking at speeds above 25 mph. Why?
- Remember, in wet weather, sudden braking often leads to skids.

Acceptable Methods

1. Push-Pull/Hand-to-Hand method
2. Fixed hand steering method (shortcoming: arms may get locked together as you attempt to steer past 180 degrees, limiting ability to make further fine adjustments).

Evasive Braking

- You may be forced in some emergency situations to brake quickly, if swerving to another space is not an option or you failed to identify an open space.
- Use the heel-pivot method.
- If you have ABS, apply steady direct pressure on the brake; if you do not have ABS, use squeeze braking (keep heel on floor and use toes to apply pressure to brake).

Evasive Acceleration

- Sometimes speeding up to avoid a hazard is necessary (e.g. merging into an available spot)
- Can you think of any other situations where you might have to evasively accelerate?

Skidding

- Skidding occurs without warning.
- Skidding can result from driving too fast and suddenly braking/ turning, braking on a slippery surface, or steering too quickly

Preventing Skidding

- Often, just lifting your foot from the accelerator – without braking -- will slow the car down enough to gain control
- If you apply the brakes, apply gradual, steady pressure. Avoid taking sudden actions
- Slow down and drive according to conditions
- Avoid sudden steering actions
- Steer where you want the car to go

Vehicle Breakdowns

- Often Occur without warning
- Good vehicle maintenance can minimize vehicle breakdowns, but it is no guarantee as there are many dangers on the road, plus environmental dangers

If your vehicle breaks down, how can you be certain you are visible to other drivers?

Vehicle Indicator Light Meanings

- Your vehicle can provide you with valuable information about performance, but ONLY if you know what indicator lights mean.
- What are some especially important vehicle indicator lights?

Engine Failure

- How will you know?
 - May hear a loud bang, and the noise may continue
 - May lose power to the engine although may still be able to drive
- What should you do?
 - Shift to NEUTRAL
 - Search for a safe place off the road
 - Put on your flashers to indicate that you are in trouble
 - DO NOT BRAKE
 - Carefully work your way over to the closest side of the road and pull off

Engine Overheating

- How will you know?
 - Temperature gauge will go into the “red zone”
 - May start to see steam coming from under the hood
- What to do?
 - Turn off the AC system
 - Turn on your heater
 - Pull off the road if the temperature does not go down
 - DO NOT OPEN THE RADIATOR CAP

Accelerator Failure

- How will you know?
 - The gas pedal will not move up or down
 - The “RPM’s” may increase
 - Vehicle may start to pick up speed
- What should you do?
 - Stay calm and shift to NEUTRAL
 - May want to try pumping the gas pedal to see if it will respond
 - Search for a safe place to get off the road on the right
 - Steer smoothly/brake as gently as possible
 - Pull off roadway
 - Turn off vehicle

Brake Failure

- How will you know?
 - There is no resistance when you push on the brake pedal
 - You have no brake fluid
 - The brake light indicator may come on
- What should you do?
 - Stay calm
 - Turn on your hazard lights to signal that something is wrong
 - Shift your car into a lower gear to help slow it down
 - Carefully work your way over to a safe place to stop
 - Pump your brakes to try and get some pressure back into the system

Headlight Failure

- What should you do should your headlights fail?
 - Try using the opposite of the lights you are using. For example, if the low beams go out, switch to the high beams.
 - If both the low beam and high beam lights are out, slow down and turn on your hazard lights
 - If you absolutely have no lights, you need to pull to the side of the road and call for help.

Tire Failure

- How will you know?
 - You will hear a loud thudding sound
 - Car will be lethargic in steering response
- What should you do?
 - Continue to look and move straight forward
 - Turn your hazard lights on
 - Maintain control of the steering wheel
 - Deaccelerate carefully and smoothly
 - Turn your right turn signal on
 - Safely pull off the road and park the car
 - If you are able to change the tire yourself, be sure to use flares or reflective triangles, so other drivers know you are on the side of the road).
 - If needed, call for assistance.

Car Fire

- How will you know?
 - You will smell burning rubber and see smoke and possibly flames
- What should you do?
 - Remain calm
 - Turn your hazard lights on
 - Quickly steer the vehicle off the right side of the road
 - Turn off the ignition
 - Get everyone out of the car and get away from the vehicle
 - Call 911 for help and allow the emergency professionals to extinguish the fire.

Vehicle Feature Learning Activity

- List vehicle features and technology that can assist drivers in traction and steering control

Identifying and Using Equipment and Technology When the Weather and Lighting Conditions Change

Break up into 1 – 2 groups to identify and describe the following technologies. Each student group will then answer the Peer Teaching Assistive Technology Questions.

- High mounted brake light
- Back up lights
- Turn signals both in rear and on side mirrors
- Tinted windows
- Sun visor – front and sides
- High beams/low beams
- Dashboard adjustment for controls/dimmer
- Night mirror adjustment
- EFI (Electronic Fuel Injection)
- ESC (Electronic Stabilizing Control)
- Remote starter
- Emergency flashers
- Defrost (front and rear)
- Heater/air conditioner
- External temperature control
- Tire pressure gauge readings in vehicle

Peer Teaching: Assistive Technology Questions

- How does this technology work?
- What environments or conditions is it appropriate for?
- What are the pros of using this technology?
- What are the cons of using this technology?

References

- National Safety Council Defensive Driving Course.