The purpose of this Student Worksheet is to acquaint you with the techniques of emergency maneuvering, to help you develop the ability to recognize the situations where these maneuvers can be used, and to identify some potential dangers involved in using these maneuvers. By the end of this Student Worksheet, you should have acquired a base or background of knowledge concerning emergency maneuvers that will allow you to make alternative decisions when confronted with potential conflicts.

On the following pages you will cover the techniques used for various emergency maneuvers, general situations where these maneuvers could be used, and some of the dangers involved in each.

SEE WITH YOUR MIND: In every emergency your habits take over. There is no time to think “What should I do?” you just do it, right or wrong. The risk prevention habits you are developing in this course are necessary to prevent, detect and deal with every day problems and emergency situations that will inevitably develop.

In order to use any emergency technique effectively you must see the situation occur while there is time to take action. For that reason it is vital that you habitually see LOS-POT problems develop and check the related zones for alternate escape routes. It is also necessary to look to the target area beyond your open escape path. It is critical that you aim through the open path prior to any evasive action steering maneuver. Often in an emergency, perhaps because they develop surprisingly fast, or more likely because one has not developed the best risk prevention habits, drivers visually fixate on the obstacle, often with devastating results.

THRESHOLD BRAKING: The technique of stopping as quickly as possible in an emergency without skidding is known as threshold braking. Threshold braking is an emergency response. This technique is useful in situations where something is directly in front of your vehicle. These situations come up most often because the driver is not alert to LOS-POT problems, is following too closely and/or is distracted by some other factor. For example, talking on the cell phone, eating, drinking, changing a CD etc.

To effectively utilize this technique you must be able to pivot the ball of your right foot from the accelerator to the brake as rapidly as possible and push on the brakes on as hard as possible without locking up the wheels. A slight release of brake pressure or Trail Brake (the same technique you have practiced to make smooth stops and balanced turns) is used to balance the vehicle during the last second or two of the stop and as part of the sequence used when making an emergency turn. Braking too hard and locking the wheels results in a front wheel skid, increases your stopping distance and reduces or eliminates steering control.

The threshold braking technique increases your chances of being hit from the rear. Since there is more of a chance of being hit from behind when using this technique, you need to adjust how quickly you stop considering the danger ahead if there is also a risk of collision with the vehicle behind you. Threshold braking also increases the possibility of skidding, especially on slippery surfaces. If skidding does develop, the Trail Brake technique will release the skidding action.

EVASIVE ACTION STEERING: Often when confronted with emergencies, you may find it necessary to steer quickly to avoid a crash. Steering can be done in a shorter distance than braking in an emergency. Response time is cut from 3/4 of a second to 1/2 second by using your hands instead of your feet for response. It is important that you develop a habit of using a balanced hand position at the
9 & 3 or 8 & 4 positions for the best control under all driving conditions. In most emergencies, steering can be more efficient than braking to avoid conflict with obstacles. The use of evasive action steering when faced with a hazard will allow you to utilize an open escape path.

As stated earlier, it is critical that you habitually see problems develop, check related zones for an escape path and aim through the open path to the target area prior to any evasive action steering maneuver. The main danger involved in evasive action steering is that you may steer into the path of other vehicles, or into roadside hazards, when you aren’t fully aware of what is to either side of you. If you don’t see a problem develop you won’t take an action. If you see a problem but don’t have the habits of finding an open escape path and aiming through it to the target area your steering inputs will be too large or too small. Too much steering input can result in an out of control skid or worse. Too little input can result in an unsuccessful attempt to evade a potentially serious problem or collision. At high speeds, evasive action steering increases the likelihood of a sideways skid, or even turning over, if done improperly.

Evasive steering requires 3 steering actions: The first moves the only the front of your vehicle. This initial steering action inputs only the minimum amount of steering required to avoid an obstacle. The second action moves the rear of the vehicle away from the obstacle and requires twice the steering input as the first action. (For example, if your initial input is a ⅛ turn of the wheel your second must be ¼ turn of the wheel.) The third action straightens the vehicle as you move around the obstacle. It requires steering input in the amount equal to the first input. (⅛ turn – front end, ¼ turn – rear end, ⅛ turn – straighten) And those three steering actions are accomplished in as little time as ½ second. That is one reason it is best to stay off the brake and gas pedal thus separating the speed and steering forces prior to using evasive steering.

Some situations, an emergency turn for example, call for a combination of two or more techniques performed in the correct sequence, one thing at a time.

HYDROPLANING: Hydroplaning takes place while driving on wet roads and can occur at speeds as low as 35 MPH. Most tires will wipe the roadway surface (in much the same manner as a windshield wiper clears the windshield) of up to about 1/4 inch of water. However, as the speed increases, the tires cannot wipe the road as well and they start to ride up on the water, just like a set of water skis. In a standard passenger vehicle, partial hydroplaning starts at about 35 MPH and increases with speed up to about 55 MPH, at which point the tires can be totally up on the water. In a severe rainstorm for example, with less than 1/8 inch of tire tread, the tires may not touch the road at 55 MPH. If this is the case, there is no friction available for braking, accelerating, or steering. A gust of wind, a change of road camber, or a slight turn can create an unpredictable and uncontrollable 4 wheel skid.

With today’s lesser crowned roadways, especially freeways, hydroplaning is an increasingly important factor in automobile accidents. A driver can normally predict areas where hydroplaning will occur, but not always; you may suddenly find yourself in a hydroplaning situation. If you do Hydroplane, the best thing to do is to take your foot off the accelerator and allow the vehicle to slow down without braking. If you skid while your vehicle is only partially hydroplaning, you should be able to regain control by correcting (steering towards open travel path) for the particular type of skid that occurs. On the other hand, if you’re totally hydroplaning, about all you can do is release the accelerator and ride out the skid without braking.

To help to prevent hydroplaning reduce your speed on wet roadways. You also need to have properly inflated, good tires with deep tread, at least 1/8 inch. The tread allows the water to escape from under the tires and tends to prevent complete hydroplaning at normal highway speeds. However, when the depth of the water exceeds the depth of the tire tread, complete hydroplaning can be expected at speeds
from 50 - 55 MPH, so slow down even when it appears no one around you is, just do it!

SUMMARY
The need for loss control responses can normally be avoided by using prevention techniques. Preventative actions are much easier to accomplish than successfully dealing with an emergency. The best way to prevent them from occurring is to embrace and habituate a risk prevention style of driving that includes: Keeping yourself and your vehicle in the best shape for driving, knowing exactly where your vehicle is positioned on the roadway and in relationship to others, using a visual search pattern to the target area, the targeting path, to the left, right and rear, maintaining vehicle balance, finding, solving and controlling problems before they become emergencies, creating and keeping open space for yourself and others to use.

The use of a single emergency maneuvering technique may not allow you to avoid conflict. When an emergency does occur, you must respond and it is vital that you respond correctly by habit. The same habits that prevent emergencies from occurring can help you take the best actions. Once you have responded to a situation you must be prepared to change your response if the situation changes. It is much easier to maintain control of your vehicle than to regain control once it is lost. However if a loss of control does occur keep your head and your eyes focused on the target area, stay off the pedals and keep working at getting yourself out of the emergency as long as you have a chance to control or regain control of the vehicle.
9.03 Avoiding Collisions & Minimizing Impact Worksheet

Name: ___________________________________________________ Date: __________

Section 1

Directions: Using the Emergency Maneuvering Fact Sheet complete this worksheet by filling in the blanks.

In every emergency your ______ take over. There is no time to think “____________” you just do it, right or wrong. It is vital that you habitually see ______________ develop and ______________ for alternate escape routes. It is also necessary to look to the ______ beyond your open escape path. It is critical that you aim __________ the open path prior to any evasive action ______ maneuver.

The technique of stopping as quickly as possible in an emergency ______________ is known as threshold braking. These situations come up most often because the driver is not alert to LOS-POT ______________, is ______ too closely and/or is __________ by some other factor. To effectively utilize this technique push on the brakes on as hard as possible _______ locking up the wheels. A slight _______ of brake pressure or _______ is used to ______________ during the last second or two of the stop and as part of the ______________ used when making an ______________. Braking too hard and locking the wheels results in a ______________, increases ______________, and ______________ or eliminates _______ control.

The threshold braking technique __________ your chances of being hit from the ______. If skidding does develop, the _______ technique will release the _______ action.

In most emergencies, steering can be more _______ than braking to avoid conflict. The use of evasive action steering will allow you to __________ an open _______ path. It is critical that you habitually ______________, ______________ for an escape path and aim __________ the _______ to the _______ prior to any evasive action steering maneuver. If you see a problem but don’t have the _______ of finding an open escape path and aiming through it to the target area your steering inputs will be too _______ or too _______. Too much steering _______ can result in an out of control _______ or worse. Too little input can result in an unsuccessful attempt to _______ a potentially serious problem or _______. Evasive steering requires 3 steering actions: The first moves the only the front of your vehicle. This initial steering action inputs only the _______ amount of steering required to avoid an obstacle. The _______ action moves the _______ of the vehicle away from the obstacle and requires _______ the _______ input as the first action. The third action straightens the vehicle as you move around the obstacle. It requires steering input in the amount equal to the _______ input. That is one reason it is best to stay ____ the _______ and ___ pedal thus _______ the speed and steering forces _______ to using evasive steering.

Section 2

Directions: In the following situations, evasive actions are necessary. During the class activity use the spaces provided to write what visual pattern and evasive action sequence you would use to avoid an impact.

Here are your evasive action choices:

**Vision**
- Target open space
- See LOS POT problem
- Check related zone(s)

**Speed Control**
- Off Pedals
- Threshold Brake
- Trail Brake

**Steering**
- Evasive Steer: Rt., Lt., Straight
- Evasive Steer: Lt., Rt., Straight
- Hold Wheel Straight
- Control Steering
You are always the driver of the white car.

**Situation # 1:** Car approaching crossing center line into your lane

![Visual Pattern]

**Evasive Action Behavioral Sequence:**

**Situation # 2:** As you round a curve at 40 mph, you come upon a stalled vehicle in your lane

![Visual Pattern]

**Evasive Action Behavioral Sequence:**
**Situation # 3:** As you round a curve at 40 mph, you come upon a stalled vehicle in your lane and an approaching car visible in the oncoming lane.

**Visual Pattern:**

**Evasive Action Behavioral Sequence:**

**Situation # 4:** A car turns in front of you in an intersection at the last minute.

**Visual Pattern:**

**Evasive Action Behavioral Sequence:**