

Curriculum Scope and Sequence Modules for Driver Education in Virginia

Module Seven

Driver Performance: Personal Factors

- Introduction to Alcohol - Saying No
- Nature of Alcohol - Related Crashes
- Physiological and Psychological Effects of Alcohol
- Effects of Alcohol and Other Drugs On the Driving Task
- Dealing with Driver Fatigue
- Preventing Road Rage

Virginia Department of Education
provided in cooperation with the
Virginia Department of Motor Vehicles

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Standards of Learning Addressed In This Module

- DE.8 The student will analyze and describe the physiological and psychological effects of alcohol and other drugs and their impact on a driver's awareness of risks and involvement in collisions. Key concepts include
- a) prescribed and over-the-counter medications;
 - b) illegal or illicit drugs;
 - c) effects of alcohol and other drugs on vision and space management;
 - d) synergistic effects of drugs;
 - e) alcohol elimination factors.
- DE.9 The student will identify and analyze the legal, health, and economic consequences associated with alcohol and other drug use and driving. Key concepts/skills include
- a) positive and negative peer pressure;
 - b) refusal skills;
 - c) Implied Consent, Zero Tolerance, and Use and Lose laws;
 - d) Administrative License Revocation, loss of license, ignition interlock, and other licensing restrictions;
 - e) court costs, insurance requirements, Virginia Alcohol Safety Action Program referral, and other costs.
- DE.10 The student will recognize the consequences of aggressive driving and other emotions that influence driving behaviors. Key concepts include
- a) stress and anxiety;
 - b) anger management;
 - c) the relationship between aggressive driving and road rage.
- DE.11 The student will analyze the effects of fatigue and other physical conditions on driver performance. Key concepts include
- a) short- and long-term physical and mental disabilities;
 - b) chronic health conditions;
 - c) circadian rhythms;
 - d) sleep deprivation.

Driver Education and In-Car Instruction

Module Seven—Driver Performance: Personal Factors

The student will develop an understanding of the effects of alcohol and other drugs, fatigue, and emotions on the driving task; assess the dangers of these factors; and develop strategies to make health-promoting decisions throughout his/her life.

Topic 1—Introduction to Alcohol – Saying No

The student will identify and analyze the legal, health, and economic consequences associated with alcohol use.

Topic 2—Nature of Alcohol-Related Crash Problems

The student will analyze statistical data and utilize critical thinking to evaluate the nature of impaired driving crash problems.

Topic 3—Physiological and Psychological Effects of Alcohol

The student will analyze and evaluate the physiological and psychological effects of alcohol.

Topic 4—Effects of Alcohol and Other Drugs on the Driving Task

The student will understand the effects of alcohol and other drugs on the driving task, and assess their impact on a driver’s awareness of risk and potential for involvement in a crash.

Topic 5—Dealing with Driver Fatigue

The student will recognize the symptoms of fatigue, and develop strategies to avoid driving when fatigued.

Topic 6—Preventing Road Rage

The student will understand the dangers of aggressive driving, avoid aggressive driving, and utilize strategies to respond appropriately to aggressive drivers.

Minimum Time Frames	
Module Seven—8 Hours	
Classroom Instruction	Recommended Minutes
Topic 1 — Introduction to Alcohol—Saying No	40
Topic 2 — Nature of Alcohol-Related Crashes	20
Topic 3 — Physiological and Psychological Effects	60
Topic 4 — Effects on the Driving Task	50
Topic 5 — Dealing with Driver Fatigue	60
Topic 6 — Preventing Road Rage	60
In-Car Instruction (Option 1)	
Behind-the-Wheel Instruction/Break	25
Observation	25
Laboratory Multiphase (Option 2)	
Behind-the-Wheel Instruction/Break	25
Observation	25
Simulation	55
Parental Involvement	60

Module Seven
Topic 1—Introduction to Alcohol—Saying No

40 Minutes Instructional Time
Prerequisites: Successful Completion of Modules 1 to 6

Instructor Activities	Time Frame
<p>Review Module Seven, Topic 1 Lesson Plans Prior to Lesson</p> <p>Show Transparencies T-7.1 "Using or Not Using?" T-7.2 "Your Choices and Responsibilities" T-7.3 "Your Choices and Responsibilities"</p> <p>Distribute and Review Student Worksheets W-7.1 "Driving Drunk: Your Choice"</p> <p>Review Module Assessments Prior to Lesson MA-7.1 "Module Seven Assessment"</p> <p>Additional Resources "Drive Right" Ch. 15 "Handbook Plus" Ch. 4 "How To Drive" Ch. 4 "License To Drive" Ch. 18 "Responsible Driving" Ch. 3 Video: "Driving Drunk: Your Choice" (NCADD) available free of charge from ADTSEA, (800)896-7703. Traffic Safety Websites</p>	<p>25-40 minutes (6-10 minutes) (6-10 minutes) (6-10 minutes)</p> <p>5-10 minutes</p>

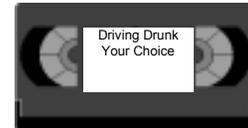
Introduction to Alcohol—Saying No

Knowledge and Skills

The student is expected to understand the consequences of impaired driving.

Activities & Resources

If available, show suggested video “Driving Drunk: Your Choice” (NCADD) to the point where the young driver is being given a field sobriety test, then stop.



- It is important to introduce the video in such a way that the audience views it with an open mind. They should listen to its message, and think of it in relation to their own choices and behaviors. “Driving Drunk: Your Choice?” can be used to complement discussion of themes such as alcohol misuse and abuse, choices and their related consequences, and the relationship between freedom and responsibility.
- Having a driver’s license brings not only freedom and independence, but also responsibility. Responsibility includes carefully considering the potential consequences of our choices. When watching the video, pay attention to the consequences caused by one person’s decision to drive after drinking.

Sample questions found on Worksheet W-7.1 may be used following the tape.

Worksheet

Show T-7.1 “Using or Not Using?” to discuss the reasons why people under age 21 use alcohol or other drugs.

- Ask students why they think Virginia has a Zero Tolerance Law for persons under age 21. (Accept all answers without criticism to assess what students know about the law.)
- Ask students why some people choose not to use alcohol or other drugs. (Accept all answers without criticism to assess what students feel about moral responsibilities.)

Using or Not Using?



Why do you think Virginia has a Zero Tolerance Law for persons under age 21?



Why do some people choose not to use alcohol or other drugs?

T-7.1

T-7.1
Using or Not Using?

As a follow-up to “Driving Drunk: Your Choice” from NCADD, show Transparency T-7.2 “Your Choices and Responsibilities,” and discuss drinking and driving consequences.

- Briefly discuss the arrest procedure of a driver using alcohol or other drugs in Virginia: evaluation at the scene, field sobriety testing, arrest, breath or blood testing, and arrest booking.
- Briefly discuss the immediate consequences associated with drinking, then relate these to future physical, legal, social, and economic consequences.
- Ask students to think about the lives of the survivors in this video and their families. Consider how many people have been affected, many of whom had no choice in becoming a victim. Think about how their lives have been permanently changed by one person’s decision to drive drunk.
- Ask students to consider the fact that none of the victims in the video thought they would ever find themselves in the situation they are in. “It can’t happen to me” is a common theme that these people prove is untrue. It can, and does, happen to people just like you every day.

Your Choices and Responsibilities



- ❑ List some short-term and long-term rewards.
- ❑ List some short-term and long-term consequences.
- ❑ Is alcohol and other drug use short-term or long term reward?
- ❑ Are consequences of alcohol use short-term or long-term?
- ❑ Easiest way to avoid the consequences is?

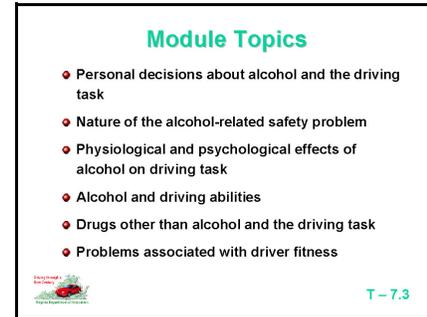
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T-7.2

T-7.2
Your Choices and Responsibilities

Show Transparency T-7.3 “Module Topics” to close discussion of this topic area. Continue discussing the reasons why people under age 21 should choose not to use alcohol or other drugs.

- Is alcohol and other drug use a short-term or long-term reward for the user?
- Are the consequences of alcohol use short-term or long-term for the victim?
- What is the easiest way to avoid the consequences of alcohol and other drug use?



T-7.3
Module Topics

Support Information

Factors Influencing Teenage Drinking

Just as there is no single reason why adults drink alcohol, there is no one reason teenagers drink. The instructor should ask the class for reasons teenagers drink. Responses should be placed on the board without making any judgment about the appropriateness of the answer.

Once all ideas have been listed, the instructor should lead a brief class discussion on all reasons given. While it is impossible to predict all responses, many common ones are given herein. The instructor should use this as support material to help answer questions and lead the discussion.

Peer Pressure

Many times teenagers (and even adults) do not like to admit that they are influenced by others. Teenagers are, however, very susceptible to pressure to drink. No one enjoys being thought of as different or as an outsider. The instructor should not deal extensively with how to cope with pressure at this time, as that will be covered in depth in later topics. The instructor should point out, however, that peer pressure could be channeled toward not drinking as well as toward drinking.

Influence of Parents

Parental behaviors have a tremendous influence on children. If a child comes from a home where alcohol is abused, this could lead the child to adopting these behaviors. If the child comes from a broken home or there is a poor relationship between the child and the parents, the child may turn to alcohol to “anesthetize” problems. Children who come from homes of parents who do not drink are less likely to drink themselves. Thus, parental influence is great in either direction.

Sociological Factors

Our culture is one that, for the most part, readily accepts drinking. Even the word “drink” has often come to mean “drink alcohol.” Prior to the beginning of this topic, the instructor should have had the class do the W-7.1 assignment. The instructor should have the class come up with as many ways as possible that Americans use “drink” to mean “drink alcohol.” For example: “Let’s stop off and have a drink,” or, “He has a drinking problem.” The instructor should ask the class to refer to the homework assignment on ways that using “drink” means drinking alcohol. As with other factors, sociology may work for no drinking or for less drinking, if that is the nature of the cultural surroundings.

Anxiety, Frustration, etc.

Worry about school, athletics, boy/girl friends, jobs, family, etc. are all part of growing up. Young people often turn to alcohol to seek relief from such tensions. Unfortunately, the relief is short-lived and often produces worse problems than those the teenager was trying to escape.

To Have a Good Time

Drinking is associated with “partying” for a large percentage of teenagers. The idea of “Let’s get drunk and have a good time,” “Party ‘til you puke” and “Avoid hangovers—stay drunk” are often thought of as normal behavior. This is probably brought on by a combination of advertising, misconceptions, peer pressure and feelings of inadequacy. If a person needs alcohol to relax and have a good time, that person may be headed toward serious problems, which will be discussed at a later time.

Making Choices and Taking Responsibility to Say “No”

Explain the importance of recognizing that alcohol/other drug use and driving is a serious problem. Drinking and driving is illegal at any age. Evidence demonstrates that combining alcohol with driving is the leading cause of older teenage drivers’ crashes.

The goal of this session is to have each student recognize the potential for injury, and hopefully make reduced-risk decisions regarding the use of alcohol and other drugs. Although alcohol use is a choice made by people, use of alcohol and other drugs is controlled by laws and enforcement agencies.

Students will be provided with information regarding the risks associated with alcohol use. Students will look at why some people make choices to use alcohol and other drugs. Students will recognize the legal, moral, health, and economic consequences of using alcohol or other drugs unless they are under the care of a physician.

Using the Video “Driving Drunk: Your Choices”

This video focuses on four real-life situations in which someone made the choice to drive drunk. The video is designed to show the long-term effects of those choices. You will meet two moms who lost a young adult son and daughter to drunk drivers. You will meet a man responsible for his own single car crash. Now he lives with the result of his choice. Finally, you will meet a young man who insisted on driving drunk in spite of efforts to stop him, killing a young mother and her child. Their stories will affect your life and hopefully your choices in the future.

The facilitator should be aware that some viewers may identify with portions of the video, and have strong emotional reactions to the stories presented. Accommodations for these students should be made. At some point the students may bring up the idea that it is easiest to just not use alcohol or other drugs and drive. The instructor may ask if passengers, also using alcohol, are any more or less responsible for their choices.

Why Young People Choose to Use Alcohol or Other Drugs

Discussion may revolve around the fairness of the law rather than the protection of the lives of young persons under age 21. Instructor may ask if they are aware of any evidence that supports the need for such a law. The students need to think about the legal, ethical, and moral reasons for making choices about alcohol and other drug use.

Enforcement Risks

The discussion should come from the students, so allow them to engage without feeling they are being judged. Discuss evaluation at the scene, field sobriety testing, arrest, breath or blood testing, and booking. Although this will be dealt with in more detail in a later session, it is important to allow students some flexibility in expressing themselves with regard to enforcement. The instructor should be careful not to make this a lecture.

Consequences of Using Alcohol and Other Drugs and Driving

The students should recognize the need to be responsible for their choices and behavior. The criminal justice system is designed to protect others from those people who are unable to, or choose not to, make responsible decisions and choices. Legal and other consequences of high-risk decisions are sometimes not known by the young driver until after the collision has occurred. Ask students to list personal consequences that pertain to the high risk decision-making process.

Reasons Why People Under Age 21 Should Choose Not to Use Alcohol or Other Drugs

The instructor's goal is to discuss how choices and responsibilities are related. Continue with a brief discussion using the transparency and some of the sample points below. Be sure to keep this as a brief discussion and not a lecture. The goal is to determine what students may already recognize. More discussion and lecture time will be devoted to this.

- Briefly discuss the concept of short-term and long-term rewards and consequences.
- Is alcohol and other drug use a short-term or long-term reward for the user?
- Are the consequences of alcohol use short-term or long-term consequences for the victim?
- What is the easiest way to avoid the consequences of alcohol and other drug use?

Permission to Say “No” to Alcohol and Other Drug Use and Driving an Automobile

The instructor's goal is to give the students a reason to choose “no” when confronted with short-term rewards. Continue with brief discussion, using some of the sample points below.

- This should not involve alcohol or other drugs at this point. Ask about the differences in short-term vs. long-term rewards. Relate this to past discussions about risk-taking and decision-making.
- Ask about the differences in short-term vs. long-term consequences. Relate this to past discussions about risk taking and decision-making.
- Encourage students to realize that the rewards involved in alcohol use are short-lived in comparison to their lifetime. Most young persons do not have a keen sense of the present vs. the future.
- The emotional scars often outlast the physical, legal, and moral consequences.
- Any medical professional will say that the easiest way to avoid the consequences of alcohol and other drugs is to not use them.

Module Seven
Topic 2—Nature of Alcohol-Related Crashes

20 Minutes Instructional Time
Prerequisites: Minimum Age For Entry Into Program

Instructor Activities	Time Frame
<p>Review Module Seven, Topic 2 Lesson Plans Prior to Lesson</p> <p>Show Transparencies T-7.4 "Traffic Death Comparisons" T-7.5 "Underage Alcohol-Related Crashes in Virginia"</p> <p>Distribute and Review Student Worksheets W-7.2 "Ghost Out Project" W-7.3 "Mock Car Crash Project" W-7.4 "Nature of Alcohol-related Problems: Crash Rates"</p> <p>Review Module Assessments Prior to Lesson MA-7.1 "Module Seven Assessment"</p> <p>Additional Resources (Media and/or Text) Virginia Traffic Laws, current edition Virginia Criminal Laws, current edition "Drive Right" Ch. 15 "Handbook Plus" Ch. 4 "How To Drive" Ch. 4 "License To Drive" Ch. 18 "Responsible Driving" Ch. 3 Http://www.leg1.state.va.us Title 18.2, Chapter 7</p>	<p>15-20 minutes (7-10 minutes) (7-10 minutes)</p> <p>10-15 minutes</p>

Nature of Alcohol-Related Crashes

Knowledge and Skills

The student is expected to examine the effects of impaired driving on crashes.

Activities & Resources

Use Worksheet W-7.2 “Ghost Out Project” to discuss an optional student project that dramatizes the consequences of using alcohol and other drugs while driving.

[Worksheet](#)

Use Worksheet W-7.3 “Mock Car Crash Project” to discuss another optional student project that dramatizes the consequences of using alcohol and other drugs while driving.

[Worksheet](#)

Ask the class if they know anyone who has ever been involved in an alcohol or drug-related traffic offense. (It is not necessary to know the details of any such incidents.) Usually a significant percentage of the group will at least have known someone who has had such an involvement. The instructor should be prepared to provide an example or use the suggested video if no students come forward.

Review concepts presented in the video “Drunk Driving: Your Choice.” Ask the following:

- “How often do DUI related accidents occur?”
- “How were the friends of the people killed affected?”
- “How were anger and alcohol related in the accident shown?”
- “Is experience the only way to learn about the effects of alcohol?”



Nature of the Alcohol-Related Traffic Crash Problem

Although alcohol is a factor in accidents of all types, Topic Two focuses on traffic accidents. Students will be provided statistical data related to accidents involving young drivers and alcohol.

Introduce the drinking and driving problem through a class discussion, or by reviewing concepts presented in the video. Follow up with a discussion.

- DUI-related crashes occur approximately every 23 minutes.
- Friends of the people killed were impacted by their deaths.
- Alcohol magnified the problems of fear and alcohol in the accident shown.
- Experience is the most dangerous way to learn about the effects of alcohol.

Getting students involved in projects will enhance the understanding of the nature of the alcohol-related traffic crash problem. The instructor will need to have the cooperation of school administration and faculty to effectively establish the ghost out and mock car crash. The community will often get involved in projects like this around the holidays and just before prom. These projects may become a class activity, or be sponsored by safety clubs, the school, or the community.

Discussion of Alcohol-Related Crashes

- How often do DUI-related crashes occur?
- How were the friends of the people killed affected?
- How were anger and alcohol related in the accident shown?
- Is experience the only way to learn about the effects of alcohol?

Using Virginia and US Statistics

Statistical information (as up to date as possible) should be used to demonstrate the nature of the problem. Emphasize comparisons and relationships rather than rote memorization of numbers. Virginia statistics are listed on the traffic safety section of the DMV's website—www.dmv.state.va.us. National statistics are available at www.nhtsa.gov.

For 1999 Virginia alcohol-related facts, see page 14.

Nature of Alcohol-Related Crashes

Knowledge and Skills

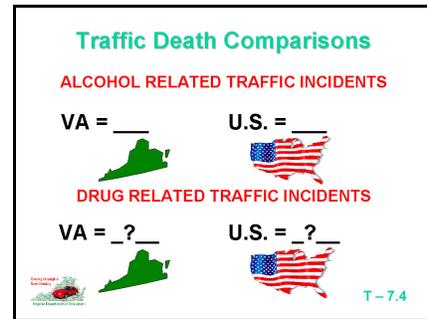
The student is expected to appraise the over-involvement rate of underage drivers in impaired driving related crashes in Virginia and the US.

Activities & Resources

Show the top of Transparency T-7.4 “Traffic Death Comparisons.” The transparency has the spaces purposely left blank. Using an erasable felt-tip pen, fill in the numbers and update annually.

Mention that statistics for drugs other than alcohol are not available because of lack of uniform and comprehensive testing.

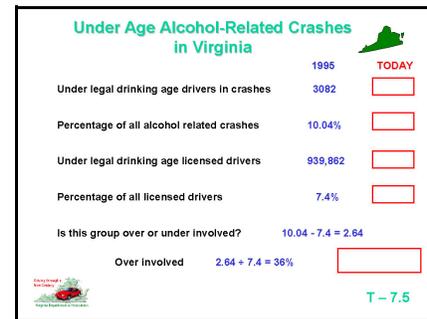
National statistics are available at <http://www.nhtsa.gov>.
Virginia statistics are available at <http://www.dmv.state.va.us>.



T-7.4
Traffic Death Comparisons

Use the top part of Transparency T-7.5 “Under Age Alcohol-Related Crashes in Virginia” to provide these numbers. Develop the concept of over- or under-representation when comparing the group percentages of licensed drivers to the group percentages of alcohol related incidents.

- If, for example, a group represented 8% of all drivers and was involved in 8% of all incidents, there will be no under- or over-representation ($8 - 8 = 0$; $0 \div 8 = 0$).
- If a group was 8% of the drivers but was in 12% of the incidents, there would be a 50% over-representation ($12 - 8 = 4$; $4 \div 8 = .50$ or 50%).
- If a group was 8% of the drivers but was in 6% of the incidents, there would be a 25% under-representation ($8 - 6 = 2$; $2 \div 8 = .25$ or 25%). (This could also be expressed as $6 - 8 = -2$; $-2 \div 8 = -.25$ or -25%.)



T-7.5 Under Age Alcohol-Related Crashes in Virginia

Hand out Worksheet W-7.4 “Crash Rates.” The students can then determine whether the under legal drinking age group is over- or under-represented in the total number of alcohol-related traffic incidents.



Support Information

Alcohol Related Crashes

After all guesses have been made, use the top part of Transparency T-7.5 to give the correct information (*keep the bottom part of Transparency T-7.5 covered*). The transparency has the spaces purposely left blank, so using an erasable felt-tip pen, fill in the numbers and update annually.

ALCOHOL RELATED: VA = 364 (1999) US = 13,395 (1996)

Note that statistics for drugs other than alcohol are not available because of lack of uniform and comprehensive testing. Even though we do not have reliable numbers for accidents caused by drugs other than alcohol, the instructor should ask the class whether they believe drugs are involved in traffic accidents and deaths. Most should agree that this is probable.

Updating U.S. DataAccident Facts (Year)

National Safety Council
1121 Spring Lake Drive
Itasca, IL 60143
1-800/621-7619

Traffic Safety Facts (Year)

NHTSA
National Center for Statistics and Analysis
400 Seventh Street, S.W.
Washington, D.C. 20590
1-800-934-8517

Updating Virginia DataMotor Vehicle Traffic Accidents

Virginia Department of Motor Vehicles
<http://www.dmv.state.va.us>
(804) 367-8140

Virginia Alcohol Safety Action Program (VASAP)

701 East Franklin Street
Suite 1110
Richmond, VA 23219
<http://www.vasap.state.va.us>
(804) 786-5895

Teen Driver Involvement in Alcohol-Related Crashes

Ask the class if they know the legal drinking age in Virginia. Most will know that it is 21. This should then mean that there are no drivers under age 21 involved in alcohol related crashes. While this should be the case, in 1999 1,057 teenagers were injured in alcohol-related incidents in Virginia. The teacher should use the top part of Transparency T-7.6 to provide these numbers. The teacher should then have the students determine whether the under legal drinking age group is over- or under-represented in the total number of alcohol related traffic incidents, using Worksheet W-7.4.

1999 Virginia Alcohol-Related Facts

- 364 persons were killed in alcohol-related crashes, a 8.33 percent increase from 1998*.
- 8,359 persons were injured in alcohol-related crashes, a 2.29 percent decrease from 1998.
- 34 teenagers, aged 15-19, were killed in alcohol-related crashes, 3.88 percent of the total (877) traffic fatalities.
- 1,057 teenagers, aged 15-19, were injured in alcohol-related crashes, 1.30 percent of the total (81,204) traffic injuries.
- 29,358 persons were tested with blood alcohol content (BAC) of .08 percent or greater, a 0.40 percent increase from 1998.
- The average BAC of tested drinking drivers was .1354.**
- 32,954 persons were arrested for DUI, 9.80 percent increase form 1998.
- Of those arrested for DUI, 83.36 percent were male and 16.64 percent were female.
- 88.82 percent of those arrested for DUI were convicted in 1998; approximately 86.65 percent of those arrested for DUI were convicted in 1999.

NOTE

*Medical examiner data used in addition to police reports to determine alcohol-related status.

**This includes an average of both breath and blood tests.

Module Seven
Topic 3—Physiological and Psychological Effects of Alcohol

60 Minutes Instructional Time
Prerequisites: Completion of Modules 1 to 6

Instructor Activities	Time Frame
<p>Review Module Seven, Topic 3 Lesson plans Prior to Lesson</p> <p>Show Transparencies T-7.6 "BAC Factors" T-7.7 "Are They the Same?" T-7.8 "How Much Light Beer (Male)" T-7.9 "How Much Light Beer (Female)" T-7.10 "Elimination of Alcohol" T-7.11 "Elimination Rate" T-7.12 "Alcohol Affects the Body" T-7.13 "Affects Persons Differently" T-7.14 "Psychological Effects"</p> <p>Distribute and Review Student Worksheets W-7.5 "Alcohol Content of a Drink" W-7.6 "Alcohol Comparisons" W-7.7 "Physiological Effect of Alcohol on Driving" W-7.8 "BAC Calculator"</p> <p>Review Module Assessments Prior to Lesson MA-7.1 "Module Seven Assessment"</p> <p>Additional Resources (Media and/or Text) "Drive Right" Ch. 15 "Handbook Plus" Ch. 4 "How To Drive" Ch. 4 "License To Drive" Ch. 18 "Responsible Driving" Ch. 3 Video: "The Effects of Alcohol on Driving" Texas A&M University, Dr. Maurice E. Dennis, Director, Center for Alcohol and Drug Education Studies, P.O. Drawer S-5, Aggieland Station, College Station, TX 77844-9175, (409) 845-3046; Fax (409)847-9579, med@hlkn.tamu.edu</p>	<p>50-60 minutes (8-10 minutes) (8-10 minutes) (8-10 minutes) (8-10 minutes) (8-10 minutes) (8-10 minutes)</p> <p>5-10 minutes</p>

Knowledge and Skills

The student is expected to:

- define blood alcohol concentration and explain factors that affect blood alcohol concentration.
- calculate the amount of alcohol in alcoholic beverages and make comparisons between the most common types of beverages and drinks.
- describe how alcohol is eliminated from the body and explain factors that affect the elimination.

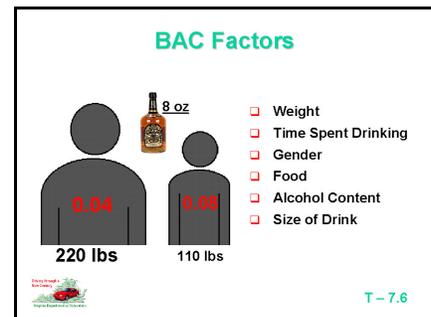
Activities & Resources

Introduce this topic by asking the class what BAC means? Blood-alcohol concentration is the term used by legal definition and refers to the amount of alcohol per the amount of fluid in the body. Explain the difference between the terms “concentration” and “content.”

- Concentration is the percentage of alcohol related to the total amount of blood in the body. For example, one drop of alcohol per 999 drops of blood equals .10 BAC per every 1000 drops of fluid.
- Content is amount of alcohol consumed. For example, one 12 ounce Budweiser is .57 ounce of alcohol consumed or one shot of 80 proof whiskey is .40 ounce of alcohol consumed.

Use Transparency T-7.6 “BAC Factors” to explain how different factors affect the blood-alcohol concentration.

- Body weight of individual
- Time spent drinking alcohol
- Gender of person
- Food consumed prior to and while drinking alcohol
- Alcohol content of the drink
- Size of drink consumed



T-7.6 BAC Factors

Use Transparency T-7.7 “Are They The Same?” to help explain similarities and differences in the amount of alcohol found in different drinks.

- Beer
- Wine
- Whiskey
- Cooler
- Margarita



T-7.7 Are They The Same?

Use Transparency T-7.8 “How Much Light Beer? (Male)” and T-7.9 “How Much Light Beer? (Female)” to calculate the amount of alcohol required to reach specified BAC levels based on weight, gender, and size of drink factors.

Note that light beer (3.6-3.8%) is more similar to wine (12%) and whiskey at 83 proof (43%) than regular beers, ales, malt liquors, and coolers. This allows for more similar comparisons on BAC charts, since many charts are based on one drink of liquor at 83 proof.

Weight Male	BAC	Ounces of Light Beer	BAC	Ounces of Light Beer	BAC	Ounces of Light Beer
200	0.03	22 oz.	0.05	37 oz.	0.07	52 oz.
190	0.03	21 oz.	0.05	34 oz.	0.07	50 oz.
180	0.03	20 oz.	0.05	33 oz.	0.07	48 oz.
170	0.03	19 oz.	0.05	32 oz.	0.07	44 oz.
160	0.03	18 oz.	0.05	30 oz.	0.07	41 oz.
150	0.03	17 oz.	0.05	29 oz.	0.07	39 oz.
140	0.03	16 oz.	0.05	27 oz.	0.07	37 oz.
130	0.03	15 oz.	0.05	25 oz.	0.07	34 oz.
120	0.03	14 oz.	0.05	22 oz.	0.07	32 oz.
110	0.03	13 oz.	0.05	21 oz.	0.07	29 oz.
100	0.03	11 oz.	0.05	20 oz.	0.07	28 oz.
90	0.03	10 oz.	0.05	18 oz.	0.07	26 oz.
80	0.03	8 oz.	0.05	17 oz.	0.07	23 oz.
70	0.03	6 oz.	0.05	15 oz.	0.07	19 oz.
55	0.03	4 oz.	0.05	12 oz.	0.07	17 oz.

Basic Assumption: 12 oz of Light Beer = 1 oz of 86 proof liquor T-7.8

T-7.8
How Much Light Beer (Male)

Weight Female	BAC	Ounces of Light Beer	BAC	Ounces of Light Beer	BAC	Ounces of Light Beer
255	0.03	22 oz.	0.05	37 oz.	0.07	52 oz.
230	0.03	21 oz.	0.05	34 oz.	0.07	50 oz.
220	0.03	20 oz.	0.05	33 oz.	0.07	48 oz.
210	0.03	19 oz.	0.05	32 oz.	0.07	44 oz.
200	0.03	18 oz.	0.05	30 oz.	0.07	41 oz.
195	0.03	17 oz.	0.05	29 oz.	0.07	39 oz.
180	0.03	16 oz.	0.05	27 oz.	0.07	37 oz.
170	0.03	15 oz.	0.05	25 oz.	0.07	34 oz.
160	0.03	14 oz.	0.05	22 oz.	0.07	32 oz.
150	0.03	13 oz.	0.05	21 oz.	0.07	29 oz.
130	0.03	11 oz.	0.05	20 oz.	0.07	28 oz.
120	0.03	10 oz.	0.05	18 oz.	0.07	26 oz.
110	0.03	8 oz.	0.05	17 oz.	0.07	23 oz.
90	0.03	6 oz.	0.05	15 oz.	0.07	19 oz.
80	0.03	4 oz.	0.05	12 oz.	0.07	17 oz.

Basic Assumption: 12 oz of Light Beer = 1 oz of 86 proof liquor T-7.9

T-7.9
How Much Light Beer (Female)

Use Worksheet W-7.5 “Alcohol Content of A Drink” and Worksheet W-7.6 “Alcohol Comparisons” to calculate the amount of alcohol in various beverages.

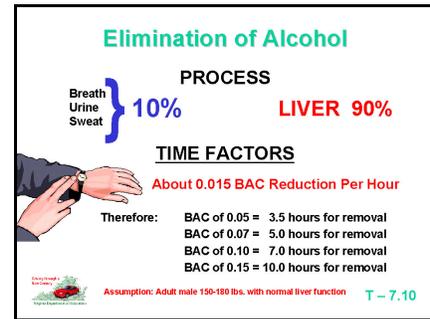


Use Worksheet W-7.7 “Physiological Effects of Alcohol on Driving” to practice math skills for identifying the number of light beers required to achieve varying BAC levels, male and female. This activity may be used as homework or classroom activity.



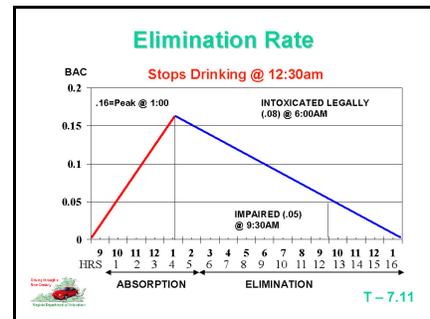
Use Transparency T-7.10 "Elimination of Alcohol" in order to demonstrate how time factors are used to predict when alcohol is eliminated from the body.

- Biological process
- Time Factors



T-7.10
Elimination of Alcohol

Use Transparency T-7.11 "Elimination Rate" and Worksheet W-7.8 "BAC Calculator" to demonstrate how time factors are used to predict when alcohol will be eliminated from the body (based on a peak level of .16 BAC).



T-7.11
Elimination Rate



Show optional video "The Effects of Alcohol on Driving" to illustrate the effects of .03 BAC and .07 BAC on the driving task. Emphasize that the BAC levels shown are below the legal intoxication level in Virginia.



Note: One female driver pictured had a measurable .107, but did not drive until it dropped to .07 for the driving evaluation.

Support Information

This topic is designed to provide basic information about the physiological and psychological effects of alcohol on humans. While a medical level of knowledge is not needed, it is important to provide accurate information about alcohol to enhance decision-making skills related to the driving task.

Important Notation

Before, during, and after this topical area, the teacher should clearly stress that for this age group the acts of consuming, purchasing and possessing alcoholic beverages are illegal and will not be condoned. Explain to the class that BAC means blood alcohol concentration, not content and other factors influencing BAC.

Factors Influencing Blood Alcohol Concentration (BAC)

Concentration is the ratio between alcohol and blood. For example: a 0.10% BAC means that there is 1 drop of alcohol for every 999 drops of blood or 1 part per thousand. Therefore, it can be seen that an illegal level may be reached with small amounts of alcohol.

- **Weight**—Larger persons have more blood and other fluids than smaller persons. The instructor may use a visual example that compares blood alcohol concentration by placing the same amount of red dye into two different size containers of water (a one-gallon container versus a two-gallon container). In which will the dye be most concentrated? (The smaller container.) The same concept holds true for different sized people.
- **Time Spent Drinking**—Alcohol, while it is not removed quickly from the body, begins to be processed by the liver shortly after it is absorbed into the blood stream which may take 20-60 minutes. A longer time factor will result in a lower BAC, other factors being equal.
- **Gender**—Women do not process alcohol as well as men due to weight and limited production of the breakdown enzyme, alcohol dehydrogenase.
- **Food**—Food does not soak up or absorb the alcohol but may coat the lining of the stomach and slow absorption. However, this is only a “pay me now or pay me later” situation, as the alcohol will eventually reach the blood stream.
- **Alcohol Content in Drink**—The higher the alcohol content a drink is, the higher the BAC it will produce.
- **Size of Drink**—A larger drink will contain more alcohol and produce a higher BAC than a smaller drink.

Explain Similarities and Differences in “Are They the Same?”

There have been many charts, cards, calculators and other materials developed to make comparisons among various beverages. While there is a common belief that there is the same amount of alcohol in normal servings of different alcoholic beverages, this may not be true.

The instructor should begin by pointing out that ethyl alcohol is the common factor in beer, wine, whiskey, and all other alcoholic beverages. This is the reason why an intoxilyzer, blood test, or other measure of body fluids can be used to determine a person’s BAC, regardless of what they have been drinking.

The math involved is not difficult, but the teacher should assist any students who may have problems in converting percentages to decimals. For example, beer at 4.5% (this is the average for regular beer in Virginia) alcohol by volume equals .045 when expressed as a decimal. A 5.1% cooler or breezer equates a decimal of .051. The teacher should also explain the concept of “proof” as this is used for the whiskey and

margarita examples. Proof means twice the actual alcohol content and is expressed with a small circle above and to the right of the number. For example, 80 proof (80°), which is the most common whiskey sold, is 40% alcohol, i.e.: $80 \div 2 = 40\%$. Whiskey at 90° is 45% alcohol and so on. The teacher should also be ready to explain how the answer to the margarita example may be obtained. Since a margarita has two kinds of alcohol (tequila and triple sec) in addition to water and other mixers, each of these must be calculated separately, then added (see completed Worksheet W-7.8). After allowing time for completion and providing help as needed, the teacher should ask the class if the differences found are really significant.

Demonstrate how weight causes variations in BAC. While this chart can be useful, it is limited to a one-hour time frame. As most persons who drink do so for more than one hour, another measurement device is needed, and this is part of the next exercise. The chart demonstrates the calculations for ten pound weight ranges and is the basis for Transparency T-7.8 and T-7.9. The information is based on a multiple factors calculator designed by Rutgers University in 1983, considering multiple factors such as weight, sex, and type of drink consumed.

Use Transparency T-7.10 to Explain Why Alcohol is Removed Slowly by the Body

The majority (90%) of the alcohol detoxified is oxidized (burned up) by the liver. The other 10% is eliminated in breath, urine, and sweat. This fact is the prime reason the “sober-up quick” methods do not work. The bottom of Transparency T-7.10 shows the time factor involved in alcohol removal.

On average, a person’s BAC is lowered only 0.015 per hour. The concept of the body detoxifying “one drink per hour” has often been used, but this has previously been shown to be inaccurate for small people. It is better to use the 0.015 per hour for several reasons. “One drink” is defined in many different ways. For example, a beer may be 6, 10, 12, 16, 32, or 40 ounces in size. While the most common size is 12 ounces, this may not be the “one drink” size a given person consumes. Some so-called “hard liquors” may really have more than twice the alcohol content of another.

Transparency T-7.10 also shows how long it will take to completely remove alcohol for a person who has reached .05 and .07 BAC. The instructor may wish to demonstrate how this number of hours was determined by having students subtract 0.015 from 0.05 and 0.07 to show this concept.

Notes

Physiological and Psychological Effects of Alcohol

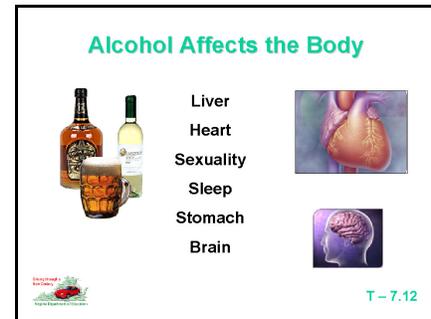
Knowledge and Skills

The student is expected to list and compare the physiological and psychological effects of alcohol on individuals and analyze the differences.

Activities & Resources

Use Transparency T-7.12 “Alcohol Affects the Body” to discuss the effects of alcohol on the body.

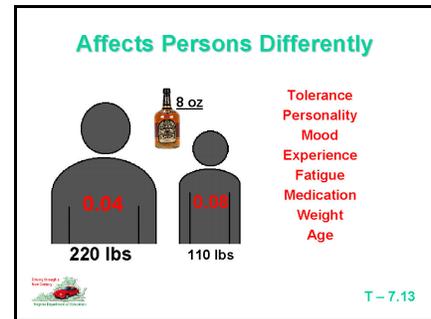
- Liver
- Heart
- Sleep
- Stomach
- Brain



T-7.12
Alcohol Affects the Body

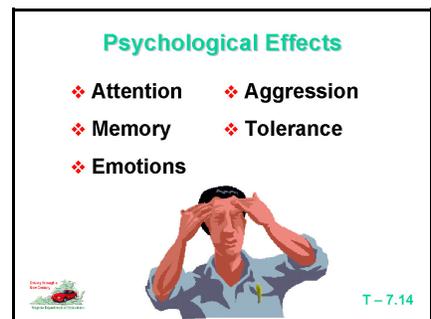
Use Transparency T-7.13 “Affects Persons Differently” to discuss how and why alcohol affects persons differently.

- Tolerance
- Personality
- Mood
- Experience
- Fatigue
- Medication
- Weight
- Age



T-7.13
Affects Persons Differently

Use Transparency T-7.14 “Psychological Effects” to discuss the psychological effects of alcohol on a person or personality.



T-7.14 Psychological Effects

Support Information

Physical Effects of Alcohol

- **Liver**—This organ is vital in producing substances that fight infections, help blood clot, and benefit health in general. It also detoxifies many substances in the blood. Alcohol may cause alcoholic hepatitis (inflammation of the liver) or cirrhosis (scarring of the liver).
- **Heart**—Alcohol causes direct damage to the heart by reducing its contractibility and increasing fat infiltration. Heavy drinking, even in young athletes, followed by strenuous exercise has proven fatal. Elevated diastolic blood pressure, swelling, and congestive heart failure are all associated with heavy alcohol use.
- **Sleep**—Because it is a depressant, alcohol can put people to sleep. However, it interferes with REM (Rapid Eye Movement) sleep and thus does not allow a person to wake up feeling rested.
- **Stomach**—Alcohol irritates the lining of the stomach and increases acidity. Gastritis and ulcers can result.
- **Brain**—The short-term effects of alcohol on brain function will be dealt with in the section relating to the driving task. Long-term effects of alcohol on the brain include destruction of brain nerve cells. One researcher found that young people are particularly vulnerable. Headaches are often caused by use of alcohol.

Different Effects for Different People

As has been previously mentioned, a given amount of alcohol does not affect all persons the same way or a given person the same way every time.

Tolerance—Tolerance is defined as the need to consume more of a drug to reach a given effect or the body's ability to eliminate the drug faster. The human body attempts to adapt in many ways. If a person suffers a cut, anti-infection organisms go to work; if a person drinks alcohol, the liver attempts to compensate to help eliminate the alcohol. It is possible for the liver to produce additional quantities of alcohol dehydrogenase (an enzyme that helps break down alcohol as it passes through the liver). This process does not go on indefinitely, however, as the liver becomes scarred from prolonged and heavy use of alcohol. When this happens, the production of the enzyme drops and a person may have even less tolerance than when he or she began drinking.

Personality—Each person has a distinct and unique personality. Thus, alcohol may affect a very outgoing person differently than a reserved, shy person.

Mood—If a person is angry, happy, or sad, he or she may react quite differently to alcohol. Anger, for example, affects the same part of the brain as alcohol, and, thus, if a person is angry and drinking, the effects of alcohol may be greatly heightened. It is important also for the instructor to note that moods often change as a result of using alcohol.

Experience—As mentioned previously, lack of experience in any area may be detrimental. This is especially true of alcohol.

Fatigue—If a person is physically or mentally tired, it does not take much alcohol to produce an adverse effect.

Medication—Any other drug, whether prescribed by a doctor, bought over-the-counter, or taken illegally, will interact with alcohol to alter alcohol's effect. The chemical reaction between and among alcohol and other drugs may produce an effect that is much greater than the alcohol or drug taken alone.

Weight—The larger a person is, the more blood that person has.

Age—Experience is a factor in how a person responds to the introduction of alcohol into the system.

Psychological Effects of Alcohol

- **Attention**—Alcohol usually affects a person's ability to concentrate on several sources of incoming information more than to concentrate on just one source of information. Since the driving task requires attention to a large number of items, this is an important concept.
- **Memory**—This is not necessarily the "blackout" concept, but it is, rather, the inability to store and retain information. Decreased ability has been found to occur with BACs as low as .03%.
- **Emotions**—Does drinking alter emotions? Does it decrease or increase tension? While there is conflicting research in this area, simple observation demonstrates that emotional control tends to be lost as more alcohol is consumed.
- **Aggression**—Aggressive behavior tends to be enhanced, especially in males, when they are placed in a competitive situation. This is easily observable in driving task situations.
- **Tolerance**—Psychological tolerance to alcohol involves the person's ability to mask the effects of alcohol, usually during the early stages of drinking. Persons learn to develop coping behaviors or not to participate in activities which might reveal their impairment. Unfortunately, such masking may prevent others from helping the intoxicated person because they do not see impairment.

Module Seven
Topic 4—Effects of Alcohol and Other Drugs On the Driving Task

50 Minutes Instructional Time
Prerequisites: Minimum Age For Entry Into Program

Instructor Activities	Time Frame
<p>Review Module Seven, Topic 4 Lesson Plans Prior to Lesson</p> <p>Show Transparencies T-7.15 "Alcohol and Space Management" T-7.16 "Impaired Vision" T-7.17 "Risk-Taking Problem" T-7.18 "Chance of Death" T-7.19 "Drugs and Driving" T-7.20 "Marijuana and Driving" T-7.21 "Other Types of Drugs and Driving"</p> <p>Distribute and Review Student Worksheets W-7.9 "The Effects of Alcohol on Driving" W-7.10 "Drugs Other than Alcohol and the Driving Task" W-7.11 "Schedules of Controlled Substances"</p> <p>Review Module Assessments Prior to Lesson MA-7.1 "Module Seven Assessment"</p> <p>Additional Resources (Media and Text) "Drive Right" Ch. 15 "Handbook Plus" Ch. 4 "How To Drive" Ch. 4 "License To Drive" Ch. 18 "Responsible Driving" Ch. 3 Video: "The Effects of Alcohol on Driving" Video: "Medical Aspects of Mind Altering Drugs" FMS Productions, (805) 684-7891</p>	<p>40-50 minutes (8-10 minutes) (8-10 minutes) (8-10 minutes) (8-10 minutes) (8-10 minutes) (8-10 minutes) (8-10 minutes)</p> <p>5-10 minutes</p>

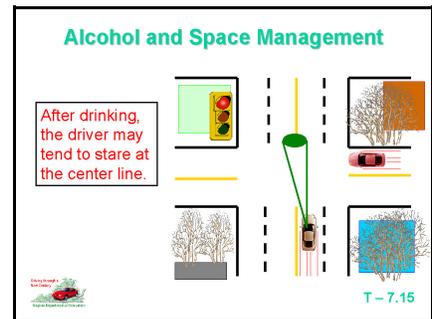
Knowledge and Skills

The student is expected to understand that the affects of alcohol and other drugs alter vision and reduce an individual's ability to utilize the space management system.

Activities & Resources

Use Transparency T-7.15 "Alcohol and Space Management" to review the space management system prior to addressing the effects of alcohol on each of its parts.

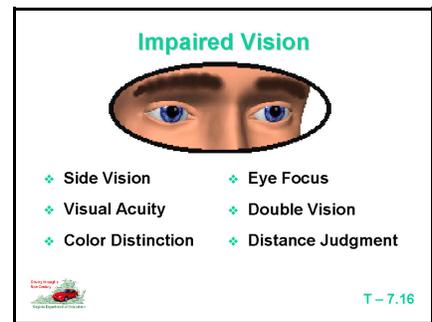
- Searching for potential risks
- Evaluating risks
- Executing decision



T-7.15 Alcohol and Space Management

After completing this brief review, begin to cover the effects of alcohol on each part of the space management system, using Transparency T-7.16 "Impaired Vision."

- Eye focus
- Double vision
- Distance judgement
- Side vision
- Visual acuity
- Color distinction



T-7.16 Impaired Vision

The Effects of Alcohol on Each Part of the Space Management System

Based on what has been identified in the **search** process, drivers must **evaluate** what others will do and what they should do. The brain must process the information identified and make accurate predictions. Ask the class why having to make multiple predictions would cause more problems for a drinking driver than a sober driver (the mind will have difficulty sorting out and prioritizing a number of elements).

In addition, it is often difficult to determine where “predict” stops and “decide” starts. Both involve the thinking process, and experimentation has shown that levels of alcohol as low as .03 reduce these abilities.

It is possible for a driver to search and evaluate correctly, yet fail to **execute** properly. While alcohol affects thinking and judgment first, it also affects muscular actions, whether in the eyes or arms and legs. After drinking, drivers tend to lose fine muscle control. This is often shown by failure to maintain their vehicles in a straight line (weaving). When they brake, they brake too hard or not enough. When they steer, they may steer too much or fail to return the wheel properly.

Searching/Identifying—The primary sense that humans use when driving is vision. Even low levels of alcohol (.03) have been found to reduce this ability. Alcohol affects vision in a number of ways. This is particularly important since about ninety percent of what a driver “identifies” is by use of his or her eyes. The prime reason for visual problems after alcohol use is lessened muscular control. Alcohol relaxes the fine muscles of the eye which focus and control eye movement. The instructor should note that dynamic (vision of motion) is more affected than static (vision related to non-moving objects).

Eye Focus—The human eye has the ability to change focus rapidly from close to far. Alcohol delays this process; thus, a driver may experience difficulty, especially at higher speeds.

Double Vision—Although humans have two eyes, each eye must work in conjunction with the other. Alcohol impairs this coordination and may produce a double image. Some drivers close one eye to cope with this, but this greatly affects distance judgment, and side vision.

Distance Judgment—A driver must be able to determine how far objects are from the path of travel. This is complicated by movement of other objects. Alcohol reduces the ability to judge distance accurately. (The instructor might demonstrate the problems humans have in judging distance, even when sober, by having each person in the class estimate the length of the classroom. After all have had a chance to do this, put the range of estimates on the board. In most classes, there will be at least a 50% variation.)

Side Vision—Sometimes called peripheral vision, this ability is critical to the driving task. A person’s central vision is very narrow and drivers must be able to take in a number of things to each side of their path of travel. Speed also reduces side vision.

Visual Acuity—This is sharpness of vision. Alcohol may make images blur for the driver and thus impair the ability to identify properly what is in the traffic scene.

Color Distinction—Drivers get much information from different colors in the traffic scene. Red is used on three types of signs: stop, yield, or some prohibition of action. If alcohol is impeding a driver’s ability to determine accurately the color of a sign or traffic light, problems for the rest of the SEEiT process will occur.

Night Vision—Humans have limited night sight at best, and alcohol reduces this ability further. In addition, alcohol reduces the control of light entering the eye. This is important, since drivers must be able to adapt from the situation of no oncoming light to that of headlights shining in their eyes.

After covering each of these areas, sum up this part by stating that most of these impairments (double vision being the possible exception) will be unnoticed by a driver. Thus, the ability to employ accurately the first part (search) of the process may be affected without the driver realizing this has occurred.

Knowledge and Skills

The student is expected to relate risk taking to the use of alcohol and other drugs.

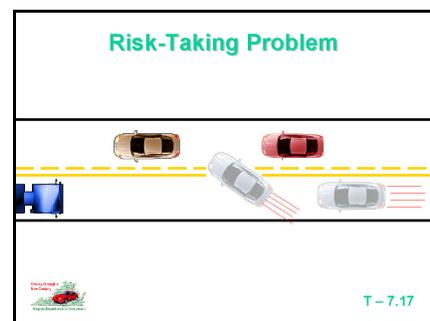
Activities & Resources

Discuss ways in which alcohol affects the brain. Concentrate on the likelihood of making inaccurate predictions because of alcohol’s impairment of the “thinking” or cognition part of the brain. This may be done by using examples of the evaluation part of SEEiT.

- If the driver is approaching an intersection with a green light facing him or her, give reasons why the driver cannot be sure drivers approaching the red light from the left or right will stop. Follow this by asking why a person who has been drinking may fail to predict accurately in this situation (failure to concentrate, process multiple variables, and accurately judge action of other vehicles).
- Set up a situation at an intersection where there are a number of elements about which a driver must make a prediction (bus, bicycle, pedestrian, dog, police car, motorcyclists, etc.).

Use Transparency T-7.17 “Risk-Taking Problem” to help explain why a driver might decide to take a greater risk after drinking.

- Compromised evaluation process
- Handling multiple tasks



T-7.17
Risk-Taking Problem

Support Information**Driving Risk**

Driving involves risk. Risk of injury to yourself or others, and risk of property damage. The only way to avoid driving risk is to eliminate all contact with the highway transportation system.

The probability of a collision determines driving risk. The level of control and risk-taking behavior increase or decrease the likelihood of a crash.

Factors Contributing to Degree of Risk.

- Vehicle condition (condition of tires, suspension system, brakes, clean windshield, etc.)
- Weather (rain, ice, snow, glare, etc.)
- Driver condition (fatigued, impaired, distracted, angry, late, inexperienced, ill, etc.)
- Poor skill (poor communication, weak visual search skills, bad habits, etc.)
- Road condition (narrow, poor condition, obstructions, construction, etc.)
- Other users (children and other pedestrians, cyclists, trucks, wild and domestic animals, etc.)
- Underestimating risk (overestimating ability and vehicle capabilities, not wearing a seat belt, drinking and driving, not accepting responsibility for bad driving decisions - it's the other guy fault, being invincible, etc.)
- Emotions (angry drivers are more likely to take risks than happy drivers, passengers can affect driver emotions, driving to "cool off", etc.)
- Distractions (smoking, portable technologies, pets, passengers, stereo systems, etc.)
- Underestimating the physical laws that affect driving (speed, gravity, traction, torque, inertia, kinetic energy, force of impact, centrifugal force, center of gravity, etc.)

Ways to Minimize Driving Risk

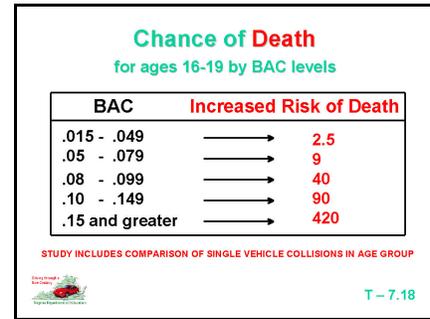
- Wear your seat belt and sit at least 10 inches from the airbag.
- Turn your headlights on at all times.
- Continue to improve your traffic safety knowledge and refine your driving skills.
- Keep a margin a space between you and other vehicles. Wise drivers keep vigilant control over the space in front of their vehicles.
- Use a simple visual search process—SEEiT.
- Maintain your car and understand how it works.
- Develop safe driving habits.
- Position your vehicle to maximize your ability to see and be seen by others.
- Place your hands at 9 and 3 or below on the steering wheel with thumbs along the rim.
- Adjust speed for conditions.
- Drive only when alert and able to efficiently process information from the driving environment.
- Adhere to traffic laws - they are designed to improve safety and efficiency.

Knowledge and Skills

The student is expected to associate the risk of death with the level of blood alcohol concentration.

Activities & Resources

Use Transparency T-7.18 "Chance of Death" to explain the increased likelihood of driver death as blood alcohol concentration increases. This comparison of single vehicle collisions demonstrates the level of risk regarding death in a collision involving alcohol compared to those involving a sober driver.



T-7.18 Chance of Death

Show the optional video "The Effects of Alcohol on Driving." This video shows the results of a study using actual vehicles.



Use Worksheet W-7.9 "The Effects of Alcohol on Driving" as a guide to the video, and as a note-taking resource for the student.



Assign a writing project as homework or as a combination of class and home activities. Ask the students to write a short paper about why they think drivers use alcohol and drive a motor vehicle.

Most drivers realize that it is a high-risk activity. Instructor should note that one of the participants explained they would not drive their children home, but would drive themselves home.

Alcohol-Related Crashes

The remainder of this topic involves the probability of being in a crash at various BACs and experimentation involving drinking drivers. The instructor should note that even low levels (.015–.049, or 1-2 drinks for some people) produce increased risk (Mayhem, 1983). This is an example of the rationale used for the implementation of “zero-tolerance” laws for young people.

Much research has been conducted on loss of driving ability due to consumption of alcohol. Most such experiments involve the use of driving simulators or actual cars driven in an off-street area. Before drinking, drivers are tested in a variety of situations and maneuvers to determine their level of ability. Each driver then consumes an alcoholic beverage of his/her choice until a predetermined BAC is reached, then the driver is retested. Following the retest, more alcohol is consumed until a person reaches higher levels, and then another test is conducted. The performances at the various BACs are recorded and compared to the sober performance.

The instructor should show the video “The Effects of Alcohol on Driving.” Use Worksheet W-7.12 as a guide to this video, and as a note-taking resource for the student. This video shows the results of a study using actual vehicles. After showing the video, the instructor should ask the class to recall specific problems the drivers experienced which are related to ideas presented in this topic. Examples include:

- overreacting in skid situations.
- using braking instead of steering.
- increasing their speed during the accident simulator exercise.
- misjudging the location of the car in its lane.

Other issues to discuss as a lead-in to the writing assignment and culmination of the lesson include:

- Are students able to see signs of intoxication exhibited by the experimental group?
- Why do students think the participants were unable to determine their driving skills prior to getting into the vehicle?

Note that all the participants in the experimental group showed skill deterioration. It is disconcerting to realize that none of the drivers scored above 90 on the pretest. The resulting 20-30% drop in skill performance translates into scores that are inadequate to pass the evaluation.

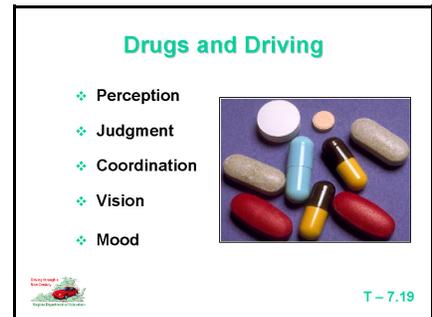
Knowledge and Skills

The student is expected to describe the psychological and physiological effects of legal and illegal drugs other than alcohol on driving.

Activities & Resources

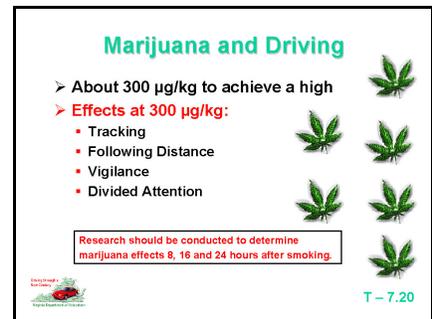
Ask the class, "What drug effects do you know of that could impair a person's ability to drive?"

After the students have supplied answers, use Transparency T-7.19 "Drugs and Driving" to cover possible negative effects of various drugs on driving-related abilities.



T-7.19 Drugs and Driving

Use Transparency T-7.20 "Marijuana and Driving" to discuss marijuana and its effects on driving.



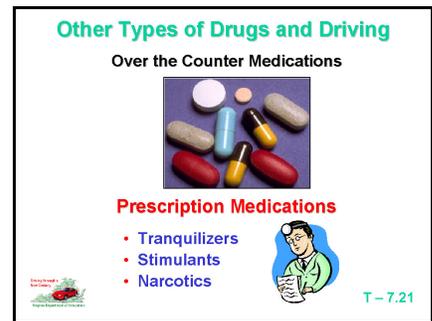
T-7.20 Marijuana and Driving

Use Worksheet W-7.10 "Drugs Other than Alcohol and Driving Task" to supplement this lesson.



Use Transparency T-7.21 “Other Types of Drugs and Driving” and the Worksheet W-7.11 “Schedules of Controlled Substances” to discuss other drugs and the synergistic effects which can impair driving.

- Over the counter
- Prescription



T-7.21

Other Types of Drugs and Driving

Worksheet

Summarize this segment by stressing that drugs should never be mixed with alcohol because of a possible synergistic effect, or show the video “Medical Aspects of Mind Altering Drugs.”



Support Information

Drugs Other Than Alcohol and the Driving Task

Many students lack knowledge about drugs other than alcohol and their effect on driving. While limited research on the effects of drugs on driving has been conducted, specific drug effects on humans are known. These have the potential to negatively affect driving. Ask the class, “What drug effects do you know of which could impair a person’s ability to drive?” This topic is limited in scope due to time, and should be dealt with more fully in health education courses. **Note: The drugs given are examples only and it is possible that many other drugs may cause adverse effects.**

- **Perception**—This involves giving meaning to human senses of vision, hearing, etc. Unless a driver accurately understands what he/she sees, it is impossible to react appropriately. Both amphetamines and cocaine can cause perceptual problems.
- **Judgment**—Accurate decisions are based on a driver’s ability to assess and judge a given driving situation. Poor judgments often result in collisions. Depressants and hallucinogens may greatly impair judgment.
- **Coordination**—Drivers must coordinate hand, eye, and foot movements to successfully operate a motor vehicle. Loss of such ability greatly handicaps performance. Inhalant and depressant type drugs have been shown to adversely affect coordination.
- **Vision**—As has been previously stated, vision is the key to the SEEiT process and safe driving. Visual impairments make it difficult to predict, decide, and execute appropriately. Narcotic drugs and cocaine have both been shown to lessen visual ability.
- **Mood**—A driver’s mood may cause him/her to take unnecessary risks or be so lethargic as to fail to act correctly in a dangerous situation. Marijuana and depressants can produce such moods.

Effects of Marijuana

Because marijuana is the drug most often found in drivers involved in crashes (after alcohol) and because more research data is available on marijuana than other drugs, specific attention is provided.

About 300 µg/kg are needed to reach a high for most people. It is not possible to state exactly how many joints this represents because any given joint could vary greatly in tetrahydrocannabinol (THC) content. (A µg/kg refers to the number of micrograms of chemical per the weight of the body in kilograms.) Effects of 300 µg/kg include:

- **Loss of tracking ability**—This is the ability to maintain vehicle in a given line.
- **Following Distance**—Both following at too close or too great a distance can cause problems.
- **Vigilance**—Not remaining attentive to the driving task can cause a driver to follow too closely, drift into another lane, etc.
- **Divided Attention**—Driving is a task that requires constant but changing attention to traffic, roadway and weather conditions, passengers, gauges, etc. Failure to correctly divide attention produces unsafe driving.

These findings are for short time frames. Further research should be conducted to determine longer term effects (8, 16, or 24 hours) of marijuana. The instructor should explain the synergistic effect of combining marijuana with others drugs as commonly found in crash studies. When drugs are combined, their effects multiply and are not easily identified or measurable.

Other Drugs and Their Impact on the Ability to Drive a Car

Over-the-Counter Medications—Any drug can affect driving abilities. It makes no difference whether it is legal, illegal, or over-the-counter. The instructor should note that over-the-counter drugs may contain alcohol or other substances that can cause reduced driving ability by producing drowsiness and fatigue. Because there are over 300,000 such drugs, it is difficult to know their effects without reading any warnings carefully.

Prescription Medications—The instructor should use the accompanying narrative to explain driving task effects of such drugs.

- **Tranquilizers**—These agents, including Valium, Halcyon, and Librium, have effects similar to those of alcohol, and this can cause driving task misjudgments.
- **Stimulants**—While there may appear to be an initial benefit for drivers, negative effects may include hallucinations, paranoia, increased distractibility and over-reliance to ward off fatigue.
- **Narcotics**—Often used as pain relievers, narcotic drugs dull the senses and may produce inattention to driving.

The key thing to remember is that any change a drug produces may also lessen driving ability. Drugs should never be mixed with alcohol because of a possible synergistic effect (chemical reaction between two or more drugs that may produce a reaction greater than either drug alone).

The videotape “Medical Aspects of Mind Altering Drugs” is recommended, if available. This 30-minute video is long, but is a valuable summary tool for this section of Module 7.

Module Seven
Topic 5—Dealing with Driver Fatigue

60 Minutes Instructional Time
Prerequisites: Completion of Modules 1 to 6

Instructor Activities	Time Frame
<p>Review Module Seven, Topic 5 Lesson Plans Prior to Lesson</p> <p>Show Transparencies T-7.22 "Definition of Fatigue" T-7.23 "Causes of Fatigue" T-7.24 "Physical Symptoms of Fatigue" T-7.25 "Physical Symptoms of Fatigue" T-7.26 "Mental Fatigue Symptoms" T-7.27 "Delaying Fatigue Onset" T-7.28 "Delaying Fatigue Onset"</p> <p>Distribute and Review Student Worksheets W-7.12 "Dealing with Driver Fatigue"</p> <p>Review Module Assessments Prior to Lesson MA-7.1 "Module Seven Assessment"</p> <p>Additional Resources (Media and/or Text) "Wake Up!" Brochure (AAA) "Drive Right" Ch. 14 "Handbook Plus" Ch. 4 "How To Drive" Ch. 4 "License To Drive" Ch. 3 "Responsible Driving" Ch. 3</p>	<p>50-60 minutes (8-10 minutes) (8-10 minutes) (8-10 minutes) (8-10 minutes) (8-10 minutes) (8-10 minutes) (8-10 minutes)</p> <p>5-10 minutes</p>

Dealing with Driver Fatigue

Knowledge and Skills

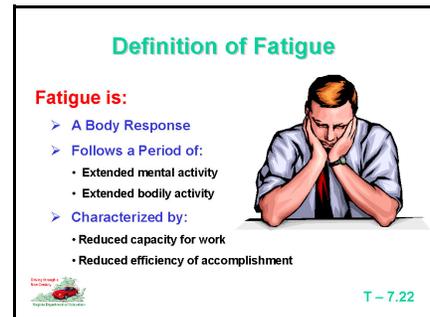
The student is expected to:

- describe the causes and symptoms of fatigue.
- explain the dangers of fatigue in relation to the driving task.

Activities & Resources

Use Transparency T-7.22 “Definition of Fatigue” to provide a base definition for fatigue.

- Physical state following a period of mental or physical activity
- Characterized by a lessened capacity for work and reduced efficiency of accomplishment



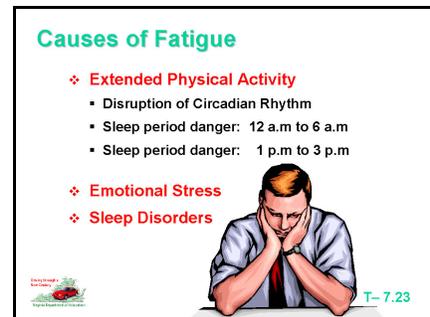
T-7.22
Definition of Fatigue

Distribute Worksheet W-7.12 “Dealing with Driver Fatigue” as a classroom activity or as a homework assignment.



Use Transparency T-7.23 “Causes of Fatigue” to discuss typical causes of fatigue in youth.

- Extended physical activity
- Disruption of circadian rhythm
- Sleep period danger: 12 a.m. to 6 a.m.
- Sleep period danger: 1 p.m. to 3 p.m.
- Emotional fatigue
- Disease-induced fatigue



T-7.23
Causes of Fatigue

Use Transparency T-7.24 “Physical Symptoms of Fatigue” to discuss physical symptoms of fatigue.

- Tired muscles
- General body sensation of tiredness
- Sleepiness
- A tired feeling in head

T-7.24
Physical Symptoms of Fatigue

Use Transparency T-7.25 “Physical Symptoms of Fatigue” to continue discussing physical symptoms of fatigue.

- Localized pain in back of head
- Pain and soreness in muscles
- Stiffness in joints
- Swelling of hands and feet

T-7.25
Physical Symptoms of Fatigue

Use Transparency T-7.26 “Mental Symptoms of Fatigue” to discuss mental symptoms of fatigue.

- Inability to keep fixed attention
- Impaired memory
- Failure to grasp new ideas
- Difficulty/slowness in reasoning

T-7.26
Mental Symptoms of Fatigue

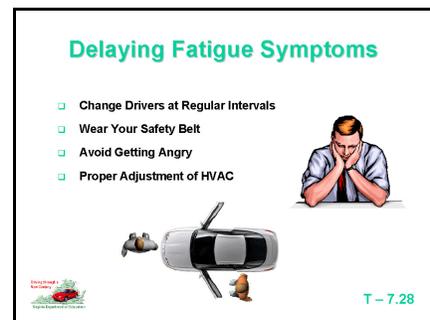
Use Transparency T-7.27 “Delaying Fatigue Onset” to discuss the delay of fatigue onset.

- Avoid long drives unless fit
- Avoid leaning forward
- Avoid driving long stretches
- Keep your eyes moving
- Let in fresh air



T-7.27
Delaying Fatigue Onset

Use Transparency T-7.28 “Delaying Fatigue Symptoms” to continue discussing delaying fatigue symptoms.



T-7.28
Delaying Fatigue Symptoms

Use the brochure, “Wake Up!” (AAA) to introduce the concept of fatigue factors related to driving. Use the pretest found on page three or the transparency provided, to introduce concepts to the class.

Use group discussion techniques to stimulate thought about each of the following issues:

- Coffee overcomes the effects of drowsiness. (False)
- I can tell when I’m going to sleep. (False)
- I’m a safe driver so it doesn’t matter if I’m sleepy. (False)
- I can’t take naps. (False)
- I get plenty of sleep. (False)
- Being sleepy makes you misperceive things. (True)
- Young people need less sleep. (False)

Review each concept area and ask for relationships to individual experiences.

Preventing Road Rage

Knowledge and Skills

The student is expected to:

- list the dangers of aggressive driving.
- identify the characteristics of an aggressive driver.
- list common errors made by aggressive drivers.

Activities & Resources

Use Transparency T-7.29 “Formula for Road Rage” to explain a basic formula for road rage engagement.

- Cultural norms of disrespect
- Condoning hostility
- More cars
- Less space
- More driver interactions
- Aggressive driving
- Road rage battles



T-7.29
Formula for Road Rage

Use Transparency T-7.30 “Three Types of Aggressive Drivers” to discuss basic types of aggressive drivers.

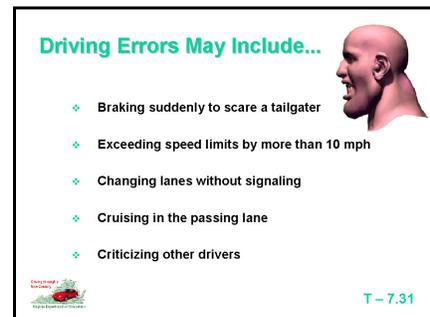
- Quiet Road Rage—complaining, rushing, competing, resisting
- Verbal Road Rage—yelling, cussing, staring, honking, insulting
- Epic Road Rage—cutting off, blocking, chasing, fighting, shooting



T-7.30 Three
Types of Aggressive Drivers

Use Transparency T-7.31 “Driving Errors May Include...” to discuss types of errors.

- Braking suddenly to scare a tailgater
- Exceeding speed limits by more than 10 mph
- Changing lanes without signaling
- Cruising in the passing lane
- Criticizing other drivers



T-7.31
Driving Errors May Include...

Use Transparency T-7.32 “Other Driving Errors May Include...” to list additional errors.

- Ask students for additional errors they have observed.
- What other errors they have made?



T-7.32
Other Driving Errors May Include...

Use Transparency T-7.33 “Do You Drive Aggressively?” to discuss driving space area.

- Learning how to evaluate your driving space
- Learning how to adjust your driving space area
- Learning how to manage disrespectful drivers



T-7.33
Do You Drive Aggressively?

Use Transparency T-7.34 “Do You Drive Aggressively?” to discuss the “Rush In” concept. Do you:

- Rush and lane jump constantly?
- See others as being in your way? Want to be the “leader of the pack?”
- Ignore road signs and regulations? They’re for other drivers.
- Drive while distracted, with low alertness, and inattention?
- Invade other drivers’ space cushions?



T-7.34
Do You Drive Aggressively?

Use Transparency T-7.35 “Do You Drive Aggressively?” to discuss the “Total Aggression” concept. Do you:

- Constantly ridicule and criticize other drivers to self or passengers?
- Close gap to deny entry into your lane?
- Give the “look” to show your disapproval?
- Speed past another car, revving engine?

Do You Drive Aggressively?

The “Total Aggression” Area

- ❖ Constantly ridiculing and criticizing other drivers to self or passengers
- ❖ Closing gap to deny entry into your lane
- ❖ Give the “look” to show your disapproval
- ❖ Speeding past another car, revving engine

T – 7.35

T-7.35
Do You Drive Aggressively?

Use Transparency T-7.36 “Do You Drive Aggressively?” to continue discussing the “Total Aggression” concept. Do you:

- Prevent others from passing you?
- Tailgate to pressure a driver to go faster or get out of your way?
- Fantasize about physical violence?
- Honk or yell through the window?
- Make visible insulting gestures?

Do You Drive Aggressively?

The “Total Aggression” Area

- ❖ Prevent others from passing you
- ❖ Tailgating to pressure a driver to go faster or get out of your way
- ❖ Fantasizing physical violence
- ❖ Honking, yelling through the window
- ❖ Making visible insulting gestures

T – 7.36

T-7.36
Do You Drive Aggressively?

Use Transparency T-7.37 “Do You Drive Aggressively?” to discuss the “Violence” concepts. Do you:

- Carry a weapon just in case...?
- Deliberately bump or ram others?
- Try to run a car off the road as punishment?
- Get out of the car, beat or batter someone?
- Try to run someone down?
- Shoot at another car?
- Have thoughts of killing someone?

Do You Drive Aggressively?

The “Violence” Area

- ❖ Carrying a weapon just in case...
- ❖ Deliberately bumping or ramming
- ❖ Trying to run a car off the road to punish
- ❖ Getting out of the car, beating or battering someone
- ❖ Trying to run someone dc
- ❖ Shooting at another car
- ❖ Thoughts of killing someone

T – 7.37

T-7.37
Do You Drive Aggressively?

Use Transparency T-7.38 "Irrational Actions While Driving" to discuss how anger is the basis for rage. Anger is controlled, rage is uncontrolled anger.

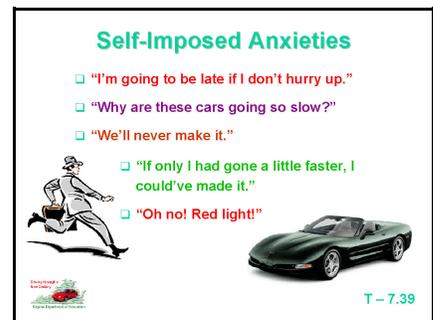
- Irrational actions of others create anger.
- There is potential for rage if you feel you have been violated or your safety has been threatened.



T-7.38
Irrational Actions While Driving

Use Transparency T-7.39 "Self-Imposed Anxieties" to explain the basis for driver anxieties.

- "I'm going to be late if I don't hurry up."
- "Why are these cars going so slow?"
- "We'll never make it."
- "If only I had gone a little faster I could've made it."
- "Oh no. Red light! Should I stop?"



T-7.39
Self Imposed Anxieties

Use Transparency T-7.40 "Dangerous Maneuvering" to explain how driver actions precipitate anger.

- "All of these cars are trying to squeeze in!"
- "I have a lead foot."
- "Ha! I'll speed up and show him a lesson!"
- "Everyone else is speeding!"
- "Let's tailgate this car in front of us. He's driving too slow!"



T-7.40
Dangerous Maneuvering

Distribute Worksheet W-7.13 "Road Rage Factors" as a classroom assignment or as homework.



Preventing Road Rage

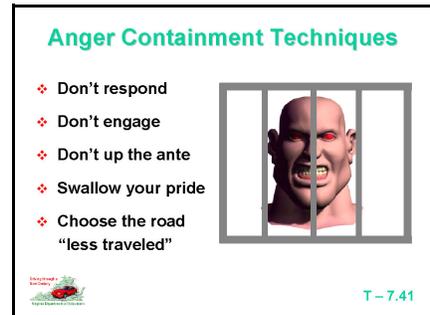
Knowledge and Skills

The student is expected to develop strategies for anger management and for responding to aggressive drivers.

Activities & Resources

Use Transparency T-7.41 "Anger Containment Techniques" to discuss anger management.

- Don't respond.
- Don't engage.
- Don't up the ante.
- Swallow your pride.
- Choose the road "less traveled."



T-7.41 Anger Containment Techniques

Use Transparency T-7.42 "Anger Containment Techniques" to introduce video and group discussion.



T-7.42 Anger Containment Techniques

Show video "Preventing Road Rage" (AAA) or "Don't Bug Out!" (The National Road and Safety Foundation).



Develop a small group discussion or use portions of the video “Preventing Road Rage” (AAA Foundation) to identify driver errors associated with collisions, and driver responses to error.

- Involve groups of four to six participants in determining the types of driver errors that they have experienced and any unusual responses to the problem by other drivers.
- Use the Worksheet W-7.13 “Road Rage Factors” to have each participant identify at least two driver errors that may produce a road rage incident.
- Identify the types of driver errors and the recommended response as identified by each small group or in the video provided.



Use Transparency T-7.43 “Anger Management” to discuss reaction to problems.

- Making errors
- Responding to errors
- Controlling emotions
- Response to problems

T-7.43
Anger Management

Use Transparency T-7.44 “Managing Anger” to discuss ways to approach problem situations.

- Act tolerant.
- Be forgiving.
- Be helpful.

T-7.44
Managing Anger

Support Information

Aggressive driving curriculum and materials are available from The National Road and Safety Foundation, Inc. Contact at The National Road and Safety Foundations, Inc. at www.nationalroadsafety.org, 212-837-4938, or email at nrsf@compuserve.com, and found at 3 New York Plaza, NY, NY 10004. T-shirts, hats, stickers are available with the “Don’t Bug Out!” logo.

A pamphlet is available from the AAA Foundation, Inc. entitled, “Preventing Road Rage.”

Aggressive driving is a traffic offense or combination of offenses, such as following too closely, speeding, unsafe lane changes, failing to signal intent to change lanes, and other forms of negligent, inconsiderate, impudent vehicle operation.

The trigger for aggressive driving is most often traffic congestion, coupled with a schedule that is almost impossible to meet.

Road rage is a criminal offense that usually follows an aggressive driving incident that escalates into a violent act. Who are these drivers that commit road rage? They are usually males between the ages of 18 and 26 who are unable to manage anger appropriately. According to Colonel Massengill, with the State Police, there seems to be no one profile—it develops in all races, ages, and in both genders. The most common thread is traffic congestion.

According to Andrew Ferguson, author of Time Magazine’s January 12, 1998 (pp. 64-68) road rage article, “There seems to be only 3 types of people on the road these days: the insane (those who drive faster than you), the moronic (those who drive slower than you) and ...you.”

The National Highway Transportation Safety Association attributes the increase in aggressive driving to:

- lack of responsible behavior.
- reduced levels of traffic enforcement.
- increased congestion and travel in urban areas.

Most altercations arise over trivial matters.

- Disputes over parking spaces
- Obscene gestures
- Fender benders
- Tail-gating
- Cutting another motorist off
- Refusing to allow another vehicle to pass
- Driving too slowly
- Braking and accelerating
- Honking the horn or not dimming headlights
- Playing the radio too loud
- Teaching unsafe drivers a lesson

Curriculum Scope and Sequence Modules for Driver Education in Virginia

Module Seven

Worksheets

- W-7.1 Driving Drunk: Your Choice
- W-7.2 Ghost Out Project
- W-7.3 Mock Car Crash Activity
- W-7.4 Nature of Alcohol-related Problems: Crash Rates
- W-7.5 Alcohol Content of a Drink
- W-7.6 Alcohol Comparisons
- W-7.7 Physiological Effect of Alcohol on Driving
- W-7.8 BAC Calculator
- W-7.9 Drugs Other than Alcohol and Driving Task
- W-7.10 The Effects of Alcohol on Driving
- W-7.11 Schedules of Controlled Substances
- W-7.12 Dealing with Driver Fatigue
- W-7.13 Road Rage Factors

Simulations

- SLS-7.1 Simulation Laboratory Session
- SLS-7.2 Simulation Laboratory Session

Assessment

- MA-7.1 Module Seven Assessment

Virginia Department of Education
in cooperation with the
Virginia Department of Motor Vehicles

1. Would the beginning sequence, as described by the narrator, be typical of the type of decisions that you would need to make on a typical weekend? **Yes** **No** Explain your response.
2. Briefly describe the feelings of panic and horror associated with a collision or ask some class members to describe their feelings of terror associated with a collision.
3. Briefly describe the enforcement procedures regarding the arrest of the drivers in this video. Describe any of the following: evaluation of crash scene, field sobriety testing, arrest, breath or blood testing, booking, court trial, court judgment, or serving sentence.
4. Briefly describe the variety of consequences associated with this problem and relate to the session one concepts of physical, legal, social and economic consequences.

Dramatization

A DWI related crash occurs approximately every 23 minutes across the United States. A school or class project may involve a dramatization of the size of the alcohol-related problem and driving by sponsoring a “ghost out.” The local Student Council’s Drug, Alcohol, Safety, and Health Committee may help to conduct this project.

Goals

- To provide a dramatization of the number of persons killed in a day through DWI crashes
- To provide a school-wide forum for discussing alcohol and safety issues
- To link death in traffic crashes to persons in a school environment

Tasks

- Develop a committee for planning the event.
- Gain permission from school authorities.
- Arrange a speaker for a culminating assembly.
- Write obituaries for removed students.

Activities

- Have one student dressed as the grim reaper. With two assistants select a student from class at 23-minute intervals.
- Ghost out the students who are selected in white makeup and have them attend classes without talking the rest of the day.
- At the time of selecting the last participant, all ghost students will leave class for an assembly.
- Local speaker will provide a focus on the problem of drinking and driving.
- Students with white makeup deliver their obituaries to the speaker upon arrival at the stage.
- Obituaries may appear in school paper.

Dramatization

The mock collision may stretch across several periods for juniors and seniors. The program begins with trauma medics, police officers, and a fireman, all with personal stories to share about how drunk driving has affected them. There should be graphic slides to show injuries caused by drunk driving, and an audio tape of the “drunk drivers” partying before the accident. Shortly after this, students should hear the 911 call to alert authorities of the crash.

Students file out to a slab where they watch the aftermath of the crash; and where three students portray the drunk drivers, three students portray occupants of the other car, and two students portray witnesses who stay at the scene to console survivors. Students should take the situation very seriously and portray actual emotions to a situation in which two people die as a result of a drunk driving crash.

Soon after the crash paramedics, firemen, and police should arrive to help the wounded victims and arrest the drunk driver. Spectators should watch as the paramedics put deceased students into body bags, take other victims to the hospital, and firemen cut apart a car to save other students.

Students should then go back to the auditorium for the funeral and to remember the lives of those who died in the crash. The funeral should begin with a picture show of the all too short lives of both students. Two black clad students with their faces whited out should get up to read the goodbye letters the two students wrote had they known they were going to die.

Mourners should walk on stage of the open casket funeral to pay their last respects to one of the deceased students. However, when students look into the casket, there is no body. Instead a mirror is in the casket to show the students that they could be the one lying there dead and validate the fact that no one is invincible.

1. Do you think Virginia drivers under 21 are over-represented or under-represented in alcohol related traffic crashes?

Over

Under

Explain your answer:

Use the following information to verify the answer above. (Percentages are found on Transparency T-7.4.)

- The number of drivers under 21 involved in alcohol-related incidents was 3,723 in 1997.
- The total number of alcohol related incidents was 9,389 in 1997.
- The number of drivers under 21 in our state was 197,989 in 1997.
- The total number of Virginia drivers was 3,387,788 in 1997.

2. Show how the incident involvement rate of the under age 21 drivers is determined:

3. What is the expected rate of incident involvement for drivers under age 21? How is this determined?

4. Show how the over(+)/under(-) representation rate of the under age 21 drivers is determined:

1. Over

Drivers under age 21 are expected to be in 5.8% of the alcohol-related offenses since they are 5.8% of the population. Since they are involved in 10.04% of the alcohol-related offenses, they are 36% over-represented in the violation rate.

2. Divide the number of drivers involved in offenses by the number of total offenses in the state. 3,723 divided by 9,389. In this case the percentage is 39.6%.

3. Divide the number of drivers under 21 by the number of drivers in the state. 197,898 divided by 3,387,788. In this case the percentage is 5.8%.

4. Subtract the expected involvement rate from the actual incidence rate. $39.6 - 5.8 = 33.8$. Divide the difference in rates by the expected rate for drivers under age 21. $33.8 / 5.8 = 583\%$. Since 583% is a positive number the rate shows over involvement in alcohol-related incidents.

Please use your math skills and knowledge of alcohol content in the drinks specified below to determine the ounces of alcohol in each of the drinks:

Drink	Serving Size	Ounces of Alcohol
REGULAR BEER With 4.5% alcohol by volume	12.0 oz. serving	
LIGHT BEER With 3.5% alcohol by volume	12.0 oz serving	
NON-ALCOHOL BEER With .035% by volume	12.0 oz. Serving (Sharp's Non-alcohol)	
WHISKEY With 80° by volume	1.0 oz. Serving 80 proof = $80/2 = 40\%$	
COOLER/BREEZER With 5.1% alcohol by volume	12.0 oz. serving	
MARGARITA 2.5 oz. of lime juice & water 1.0 oz. of 80° tequila and 0.5 oz. of 50° triple sec	4.0 oz. Serving Find volume, multiply, and add for total: $\text{Proof} / 2 = \% \text{ of volume}$	
MALT LIQUOR With 7.7% alcohol by volume	16.0 oz serving	

Alcohol Content of a Drink

Please use your math skills and knowledge of alcohol content in the drinks specified below to determine the ounces of alcohol in each of the drinks:

Drink	Serving Size	Ounces of Alcohol
REGULAR BEER With 4.5% alcohol by volume	12.0 oz. serving	12 ounce serving $\times .045 \quad (\% \text{ by volume})$ $.54 \text{ ounces of ethyl alcohol}$
LIGHT BEER With 3.5% alcohol by volume	12.0 oz serving	12 ounce serving $\times .035 \quad (\% \text{ by volume})$ $42 \text{ ounces of ethyl alcohol}$
NON-ALCOHOL BEER With .035% by volume	12.0 oz. Serving (Sharp's Non-alcohol)	12 ounce serving $\times .035 \quad (\% \text{ by volume})$ $.0042 \text{ ounces of ethyl alcohol}$
WHISKEY With 80° by volume	1.0 oz. Serving 80 proof = $80/2 = 40\%$	1 ounce serving $\times .40 \quad (\% \text{ by volume})$ $.40 \text{ ounces of ethyl alcohol}$
COOLER/BREEZER With 5.1% alcohol by volume	12.0 oz. serving	12 ounce serving $\times .051 \quad (\% \text{ by volume})$ $.612 \text{ ounces of ethyl alcohol}$
MARGARITA 2.5 oz. of lime juice & water 1.0 oz. of 80° tequila and 0.5 oz. of 50° triple sec	4.0 oz. Serving Find volume, multiply, and add for total: Proof / 2 = % of volume	$1.5 + 0.5 \text{ ounce servings}$ $\times .40 \quad \times .25 \quad (\% \text{ by volume})$ $(.60 + .125) = .7125 \text{ ounces of}$ ethyl alcohol
MALT LIQUOR With 7.7% alcohol by volume	16.0 oz serving	16 ounce serving $\times .077 \quad (\% \text{ by volume})$ $1.232 \text{ ounces of ethyl alcohol}$

Please use your math skills and knowledge of alcohol content to determine the percentage difference of alcohol in each of the drinks specified below:

12 oz.	Beer @ .045	0.540 oz. Alcohol
1 oz.	80° Whiskey	0.400 oz. Alcohol
12 oz.	Cooler @ .051	0.612 oz. Alcohol
4 oz.	Margarita	0.725 oz. Alcohol
16 oz.	Malt Liquor @ .077	1.232 oz. Alcohol

Example:

Find the percentage difference between beer and whiskey for the amount given:

Step One: $.54 - .40 = .14$ oz

Step Two: $.14 \text{ oz} \div .40 = .35$ or 35%

Step Three: Beer has 35% more alcohol than Whiskey for the amount shown.

1. How much more alcohol (in percentage) does a cooler have compared to whiskey?

Step One:

Step Two:

Step Three: Cooler has ____ % more alcohol than Whiskey for the amount shown.

2. How much more alcohol (in percentage) does margarita have compared to beer?

Step One:

Step Two:

Step Three: Margarita has ____ % more alcohol than Beer for the amount shown.

3. How much more alcohol (in percentage) does malt liquor (Bull Ice) have compared to an average beer?

Step One:

Step Two:

Step Three: Malt Liquor has ____ % more alcohol than Beer for the amount shown.

1. How much more alcohol (in percentage) does a cooler have compared to whiskey?

Step One: $.612 - .40 = .212$ oz

Step Two: $.212 \div .40 = .53$ or 53%

Step Three: Cooler has 53% more alcohol than Whiskey for the amount shown.

2. How much more alcohol (in percentage) does margarita have compared to beer?

Step One: $.752 - .54 = .185$ oz

Step Two: $.185 \div .54 = .34$ or 34%

Step Three: Margarita has 34% more alcohol than Beer for the amount shown.

3. How much more alcohol (in percentage) does malt liquor (Bull Ice) have compared to an average beer?

Step One: $1.232 - .54 = .692$ oz

Step Two: $.692 \text{ oz} \div .54 = 1.28$ or 128%

Step Three: Malt Liquor has 128% more alcohol than Beer for the amount shown.

Physiological Effects of Alcohol on Driving

HOW MANY DRINKS (LIGHT BEER)*							
Weight		BAC	Ounces of	BAC	Ounces of	BAC	Ounces of
Male	Female		Light Beer		Light Beer		Light Beer
200	255	0.03	22 oz	0.05	37 oz	0.07	52 oz
190	230	0.03	21 oz	0.05	34 oz	0.07	50 oz
180	220	0.03	20 oz	0.05	33 oz	0.07	46 oz
170	210	0.03	19 oz	0.05	32 oz	0.07	44 oz
160	200	0.03	18 oz	0.05	30 oz	0.07	41 oz
150	190	0.03	17 oz	0.05	29 oz	0.07	39 oz
140	180	0.03	16 oz	0.05	27 oz	0.07	37 oz
130	170	0.03	15 oz	0.05	25 oz	0.07	34 oz
120	160	0.03	14 oz	0.05	22 oz	0.07	32 oz
110	150	0.03	13 oz	0.05	21 oz	0.07	29 oz
100	130	0.03	11 oz	0.05	20 oz	0.07	28 oz
90	120	0.03	10 oz	0.05	18 oz	0.07	26 oz
80	110	0.03	8 oz	0.05	17 oz	0.07	23 oz
70	90	0.03	6 oz	0.05	15 oz	0.07	19 oz
55	80	0.03	5 oz	0.05	12 oz	0.07	17 oz

USE THE CHART ABOVE TO ANSWER THE PROBLEMS LISTED BELOW.

- List your body weight to the nearest 10 pounds = Are you? M or F

- If your parents allow you to consume beer, how many light beers could you consume to reach a level of 0.03%?

Number of Light Beers @ 12 oz. = Number of Light Beers @ 16 oz. =

- If your parents allow you to consume beer, how many light beers could you consume to reach a level of 0.05%?

Number of Light Beers @ 12 oz. = Number of Light Beers @ 16 oz. =

- If your parents allow you to consume beer, how many light beers could you consume to reach a level of 0.07%?

Number of Light Beers @ 12 oz. = Number of Light Beers @ 16 oz. =

Worksheet W-7.7

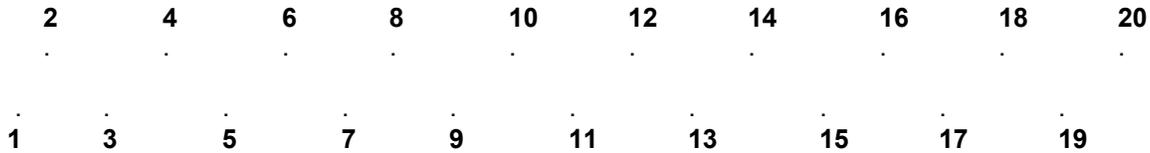
Psychological Effects of Alcohol on Driving Answer Key

1. List your body weight to the nearest 10 pounds = 110 lbs (EXAMPLE) Are you? M or F
2. Number of Light Beers @ 12 oz. = $8/12$ or (.66) Number of Light Beers @ 16 oz. = $8/16$ or (.5)
3. Number of Light Beers @ 12 oz. = $17/12$ or (1.4) Number of Light Beers @ 16 oz. = $17/16$ or (1.05)
4. Number of Light Beers @ 12 oz. = $23/12$ or (1.9) Number of Light Beers @ 16 oz. = $23/16$ or (1.4)

Name _____

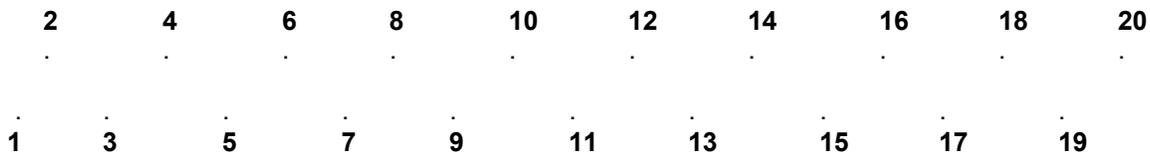
Complete this activity under the supervision of a teacher or a classmate. Connect as many dots in part A as you can in *ten seconds*. Ask your partner to time you. Dots should be connected in number order.

Part A



Have a classmate spin you around 15-20 times. Then connect as many dots in Part B as you can in *ten seconds*. Again, ask your partner to time you.

Part B



The dizziness you felt in Part B is similar to the way people feel when they have a few drinks. Think about what you have learned from this experiment.

1. How did you feel when you were trying to connect the dots in Part A?
2. How did you feel when you were trying to connect the dots in Part B?
3. What would it be like to ride a bicycle feeling the way you felt in Part B?

If available the teacher should obtain and use the Drink/Drive calculator.

0.07 Concept

Have students set the arrow in the top window (estimated % blood alcohol within one hour) on 0.07 and then read the number of drinks needed to reach this BAC based on their weight. Note that this is in a one hour time frame only.

Multiple Hours Concept

Ask the class to refer to the bottom window and determine their BAC if 2 hours had been spent (about 0.04). This helps illustrate the effects of time.

0.05 Concept

Have the class set the arrow in the top window on 0.05 and note the number of drinks needed to reach this in one hour for their weight. Note the color red begins at this point and indicates danger. Remind the class that young people are more affected by alcohol than older people and therefore, no alcohol should be consumed.

One Drink Per Hour Concept

To demonstrate that this idea may be misleading and dangerous, conduct the following exercise:

Have students set the top window on one drink at 110 lbs. This should yield a reading of about 0.03. The average elimination ratio is 0.015 per hour. Thus, a person who peaks at 0.03 will be about 0.015 one hour later ($0.03 - 0.015 = 0.015$). Ask the class how many hours, at this rate, it would take a 110 lb. person to reach the 0.07 level (approximately 4-5 hours, as $0.07 \div 0.015 = 4.7$). Therefore, a young person who weighs 110 lbs. and only drinks one drink per hour would reach an illegal BAC in 4-5 hours. This illustrates that the idea of the body removing one drink per hour does not work for small people.

Note: The teacher may wish to take these back from students after this exercise. If this approach is taken, an investment of about \$5.00 will provide calculators for an entire class.

While viewing "The Effects of Alcohol on Driving," complete the following information for use as class notes and study materials.

1. What is the purpose of this experiment?
2. What are the two groups called in this experiment?
3. Why did they volunteer?
4. How many maneuvers were used? What skills were measured?
5. How were the drivers evaluated?
6. How was BAC determined?
7. What two exercises created the most problems?
8. The first skill lost by a driver under the influence of alcohol is _____.
A. confidence B. reaction time C. judgment D. braking
9. The designated speed for the exercises used in the alcohol use evaluation was _____.
A. 20 mph B. 30 mph C. 35 mph D. 40 mph
10. The average BAC level in Virginia for a DWI arrest is _____.
A. .07 B. .09 C. .12 D. .16
11. The average BAC level for drivers killed in Virginia crashes is _____.
A. .16 B. .18 C. .22 D. .25
12. The average decline of driver performance at .03 BAC as indicated in the alcohol/driving experiment was _____.
A. .5% B. 5% C. 9% D. 16%
13. The average decline of driver performance at .07 BAC as indicated in the alcohol/driving experiment was _____.
A. 5% B. 9% C. 15% D. 22%
14. The average decline of driver performance at .10 BAC as indicated in the alcohol/driving experiment was _____.
A. 9% B. 18% C. 26% D. 29%

While viewing "The Effects of Alcohol on Driving," complete the following information for use as class notes and study materials.

1. Can drivers perform as well at low BAC levels as they can at a sober level?
2. Control and experimental groups.
3. Wanted to find out what alcohol does, interested in studies, what .10 feels like. Note that none of these drivers really knew what their actions would be.
4. Visual, judgment, reaction, steering, braking, sudden changes.
5. Timed, cones struck, and judgment errors (used brake instead of steering to avoid problem).
6. Breath test and Blood test.
7. Accident simulator and skid correction.
8. C. judgment
9. B. 30 mph
10. D. .16
11. B. .18
12. C. 9%
13. C. 15%
14. C. 26%

Provide three articles about other drugs and driving from a local newspaper, a national magazine or a sponsored website. Write a one-page summary on the back side of this sheet to address these areas or issues:

1. What were the main drugs other than alcohol involved in these articles?
2. What were the effects on the driver listed in the articles?
3. To what group of drugs did the drugs in the article apply?
4. Was death, personal injury, or property damage involved?
5. Were the drivers taking any unusual risks?

PLEASE WRITE YOUR SUMMARY ON THE REVERSE SIDE OF THIS WORKSHEET, AND ATTACH ARTICLES. A word processor may be used to complete this assignment, if websites are used for articles which are downloaded. Please attach the documents to this worksheet including your name at the top of this sheet.

Schedules of Controlled Substances

Schedules of Controlled Substances

<i>Schedule I:</i> High potential for abuse and dependence. No accepted medicinal use in the U.S. Not available with prescription. Available for research purposes only. Included in this category are narcotics and hallucinogens.				
Heroin Mescaline	Lysergic acid diethylamide (LSD) Quaalude	Peyote Psilocybin	Dimethyltryptamine (DMT) Marijuana	
<i>Schedule II:</i> Medicinal drugs with accepted therapeutic use. High potential for abuse and dependence. Requires written prescription. No refills allowed for user without first being seen again by doctor for new prescription. Providers must keep these drugs in a secured area. Included in this category are certain narcotic (e.g., opium, morphine, and codeine), stimulant, and depressant drugs				
Opium Dexedrine	Cocaine Percodan	Morphine Dilaudid	Ritalin	Benzedrine Demerol Codeine
<i>Schedule III:</i> Medicinal drugs with accepted therapeutic use. Potential for abuse and dependence greater than for Schedule IV and V drugs but less than for drugs in Schedule I or II. Abuse can lead to moderate or low physical dependence or high levels of psychological dependence. Prescription can be written or phoned in by doctor. Prescription can be written every six months and can be refilled up to five times. Included in this category are the less abusable sedative-hypnotics and narcotics.				
Empirin with codeine	Butisol	Tylenol with codeine	Florinal	Paregoric
<i>Schedule IV:</i> Medicinal drugs with accepted therapeutic use. Less potential for abuse and dependence than for Schedule III drugs. Abuse can lead to limited physical and psychological dependence. Requires written prescription. Prescription can be written or phoned in by doctor. Prescription can be written every six months and can be refilled up to five times. Included in this category are the less abusable sedative-hypnotics, weight reduction drugs, and tranquilizers.				
Luminal Serax Tranxene	Librium	Darvon Miltown	Dalmane Valium	
<i>Schedule V:</i> Medicinal drugs with accepted therapeutic use. Lowest potential for abuse and dependence. Abuse leads only to limited physical and psychological dependence. Prescription not needed for many of these drugs, which often are sold over the counter. Need to be 18 years of age. Purchaser in some cases needs to sign a dispensing log maintained by the pharmacist. Included in this category are medicines containing small amounts of a narcotic.				
Cheracol with codeine		Cosadein	Robitussin A-C	

1. From the chart above, list three drugs which have no accepted medicinal uses.
2. From the chart above, which schedule of drugs has the lowest potential for abuse?
3. From the chart above, which schedule of drugs has the highest potential for abuse?
4. From the chart above, which schedules of drugs require a prescription to obtain?
5. Select any one drug from each schedule and write two paragraphs on its uses and its potential for abuse by the user. (Place on the reverse side of this sheet.)

1. Heroin, Lysergic acid diethylamide (LSD), Peyote, Dimethyltryptamine (DMT), Mescaline, Quaalude, Psilocybin, Marijuana (Special case prescription)
2. Schedule V category has lowest potential for abuse.
3. Schedule I category has highest potential for abuse.
4. Schedule II -IV require prescriptions and some Schedule V also require a prescription.

1. **T F** Coffee Overcomes the Effects of Drowsiness.
Explain:

2. **T F** I Can Tell When I'm Going To Sleep.
Explain:

3. **T F** I'm A Safe Driver So It Doesn't Matter If I'm Sleepy.
Explain:

4. **T F** I Can't Take Naps.
Explain:

5. **T F** I Get Plenty of Sleep.
Explain:

6. **T F** Being Sleepy Makes You Misperceive Things.
Explain:

7. **T F** Young People Need Less Sleep.
Explain:

Road Rage Factors

While in groups of four to six participants, list several driver actions that you have witnessed that could have caused a collision or produced an angry response.

List what you noticed to be the road rage response to the driver actions; then list the appropriate response or driver action to be taken.

DRIVER ACTION	ANGRY RESPONSE	APPROPRIATE RESPONSE

Discussion Group _____

Names:

- Suggested Titles:** “Stopping in Time” (DORON Video or Laserdisc)
 “Threat Recognition” (DORON Video or Laserdisc)
 “Testing Driver Performance I” (SSI Safe Driver Training Series)
- Learning Goals:** The student demonstrates comprehension of speed control and vehicle positioning in lane, which will increase the ability to position vehicle for moderate risk vehicle maneuvers.
- Performance:** Performances are based on the simulation video used for this section. In each situation, the student will demonstrate correct positioning for vehicle control.
- Assessment:** Instructor records assessment of speed, positioning, and techniques on the district on-street records form. Student assessment of simulation activities may also be added to the student portfolio.

Instructor Activities	Student Driver Activities	Materials Needed and Notes

Simulation Laboratory Session

- Suggested Titles:** “Vans: Reducing the Risk” (DORON Video or Laserdisc)
 “Vans: Changing Environments” (DORON Video or Laserdisc)
 “Testing Driver Performance II” (SSI Safe Driver Training Series)
- Learning Goals:** The student demonstrates comprehension of speed control and vehicle positioning in lane, which will increase the ability to position vehicle for moderate risk vehicle maneuvers.
- Performance:** Performances are based on the simulation video used for this section. In each situation, the student will demonstrate correct positioning for vehicle control.
- Assessment:** Instructor records assessment of speed, positioning, and techniques on the district on-street records form. Student assessment of simulation activities may also be added to the student portfolio.

Instructor Activities	Student Driver Activities	Materials Needed and Notes

1. Which conversation would be typical when you would see a friend drive in the manner depicted in “Driving Drunk Your Choice?”
 - A. It is good to see you driving at the speed limit.
 - B. Does everyone have their seat belts buckled?
 - C. I am O.K. to drive, so don't diss me about my driving.
 - D. I am not in a hurry to get anywhere this evening.
 - E. None of the above.
2. Feelings of panic and horror are often associated with _____.
 - A. an alcohol-related crash or collision
 - B. a party at a friend's house
 - C. driving with my girlfriend or boyfriend to a party
 - D. looking at my report card at the end of a term
 - E. none of the above
3. Which of the following are enforcement procedures prior to an arrest regarding an intoxicated driver?
 - A. Evaluation of scene
 - B. Field sobriety testing
 - C. Preliminary breath testing
 - D. All of the above
 - E. None of the above
4. Which of the following are judicial procedures after an arrest regarding an intoxicated driver?
 - A. Court trial
 - B. Court judgment
 - C. Serving sentence
 - D. All of the above
 - E. None of the above
5. The overall alcohol/traffic safety problem in Virginia includes _____.
 - A. overinvolvement of teenagers
 - B. close to one-half of all traffic incidents
 - C. significant health and accident insurance losses
 - D. all of these areas
 - E. none of the above
6. Teenage drinking and driving in Virginia is _____.
 - A. a normal part of growing up
 - B. a growing health concern
 - C. shows under-representation in crashes
 - D. not a serious concern at this time
7. Teenagers in Virginia are over represented in alcohol-related incidents by _____.
 - A. 80%
 - B. 180%
 - C. 280%
 - D. 480%
 - E. 580%
8. The variety of consequences associated with alcohol and other drug use while driving are _____.
 - A. Family, lawful, judicial, personal, and financial consequences
 - B. Personal, legal, social, and economic consequences
 - C. Personal, lawful, financial, and ecological consequences
 - D. All of the above
 - E. None of the above.

9. New drivers are often over-represented in alcohol-related incidents due to _____.
- A. lack of driving experience
 - B. lack of alcohol tolerance
 - C. lack of experience in using alcohol
 - D. both A and C
 - E. none of the above is correct
10. What are three reasons why people drink and drive or use drugs and drink?
- A. Peers, anxiety factors, price, and having a good time
 - B. Everybody else does, social pressure, feeling good, and fear
 - C. Peer pressure, social factors, anxiety excuse, and having a good time
 - D. All of the above
 - E. None of the above
11. Intoxication per se means that _____.
- A. a driver is intoxicated by alcohol
 - B. a driver is above the legal limit for blood alcohol concentration
 - C. a driver has taken a preliminary breath test
 - D. a driver is ill due to an intoxicating drug
 - E. none of the above
12. The penalties for the various offenses for DWI are _____.
- A. fines, prosecution, penalties, and probation
 - B. deferred adjudication, fines, penalties, and jail
 - C. fines, loss of license, jail, and prosecution
 - D. all of the above
 - E. none of the above
13. Implied Consent laws are designed to _____.
- A. penalize drivers for refusal and failure of preliminary breath test
 - B. penalize drivers for refusal and failure of breath or blood test
 - C. penalize drivers for refusal of alcohol blood concentration test
 - D. penalize drivers for refusal of field sobriety tests
 - E. reward drivers for passing breath and blood tests
14. "Zero tolerance" in Virginia laws regarding drivers under age 21 means _____.
- A. no alcohol consumption is allowed
 - B. no alcohol is consumed while driving an vehicle
 - C. the BAC may not exceed 0.02 while operating a vehicle
 - D. drivers may not operate a vehicle on the roadway when under 21
 - E. none of the above
15. How can the amount of ethyl alcohol in various drinks be determined?
- A. It is the same for all drinks.
 - B. Multiply the size of the drink in ounces by the percent of alcohol in drink.
 - C. Divide the size of the drink in ounces by the percent of alcohol in drink.
 - D. Divide the proof of the alcohol content by 2.
 - E. None of the above are true.
16. How long does it take for alcohol to completely enter the bloodstream after consumption?
- A. It takes about 20 to 60 minutes to enter the bloodstream.
 - B. It takes about 10 to 20 minutes to enter the bloodstream.
 - C. It takes about 45 to 90 minutes to enter the bloodstream.
 - D. It enters the bloodstream immediately.
 - E. None of the above are correct.

17. The body eliminates alcohol _____.
- A. at about 0.15% per hour
 - B. at about 1.50% per hour
 - C. at about .015% per hour
 - D. at about 1.5 drinks per hour
 - E. none of the above is true
18. The first skill lost by a driver under the influence of alcohol is _____.
- A. confidence
 - B. reaction time
 - C. judgment
 - D. braking
 - E. none of the above is true
19. The designated speed for the exercises used in the alcohol use evaluation was _____.
- A. 20 mph
 - B. 30 mph
 - C. 35 mph
 - D. 40 mph
20. The average BAC level in Virginia for a DWI arrest is _____.
- A. .07
 - B. .09
 - C. .12
 - D. .16
 - E. None of the above is true
21. The average BAC level for drivers killed in Virginia crashes is _____.
- A. .16
 - B. .18
 - C. .22
 - D. .25
 - E. None of the above is true
22. The average decline of driver performance at .03 BAC as indicated in the alcohol/driving experiment was _____.
- A. .5%
 - B. 5%
 - C. 9%
 - D. 16%
 - E. None of the above is true
23. The average decline of driver performance at .07 BAC as indicated in the alcohol/driving experiment was _____.
- A. 5%
 - B. 9%
 - C. 15%
 - D. 22%
 - E. None of the above is true
24. The average decline of driver performance at .11 BAC as indicated in the alcohol/driving experiment was _____.
- A. .9%
 - B. 18%
 - C. 26%
 - D. 29%
 - E. None of the above is true

25. What are two physiological effects of other drugs on the driving task?
- A. The physiological effects include vision and balance.
 - B. The physiological effects include judgment and coordination.
 - C. The physiological effects include vision and judgment.
 - D. The physiological effects include judgment and balance.
 - E. None of the above are true.
26. What are two psychological effects of other drugs on the driving task?
- A. The psychological effects include perception and mood.
 - B. The psychological effects include perception and vision.
 - C. The psychological effects include vision and judgment.
 - D. The psychological effects include braking and mood.
 - E. None of the above are true.
27. Coffee overcomes the effects of drowsiness by _____.
- A. making a person think they are wide awake temporarily
 - B. having a dose of caffeine strong enough to last several hours
 - C. having a dose of nicotine strong enough to last several hours
 - D. effecting vision and judgment
 - E. none of the above
28. Being sleepy makes you misperceive things by affecting _____.
- A. perception and mood
 - B. perception and vision
 - C. vision and judgment
 - D. braking and mood
 - E. none of the above are true
29. Which of the following is a self-imposed anxiety related to aggressive driving?
- A. All of these cars are trying to squeeze in!
 - B. I am going to be late if I do not hurry up.
 - C. I have a lead foot.
 - D. I will tailgate this car in front of me.
 - E. None of the above.
30. Which of the following is a dangerous maneuver related to aggressive driving?
- A. We'll never make it in time.
 - B. I am going to be late if I do not hurry up.
 - C. Oh no! A red light.
 - D. I will tailgate this car in front of me.
 - E. None of the above.
31. Which of the following is an anger management technique?
- A. Don't respond
 - B. Make a gesture
 - C. Pull over in front of another driver
 - D. Use horn to warn the other driver
 - E. All of the above

- | | |
|--------|--------|
| 1. C. | 17. C. |
| 2. A | 18. C. |
| 3. D | 19. B. |
| 4. D. | 20. D. |
| 5. D. | 21. B. |
| 6. B. | 22. C. |
| 7. E. | 23. C. |
| 8. B. | 24. C. |
| 9. D. | 25. C. |
| 10. C. | 26. C. |
| 11. B. | 27. E. |
| 12. E. | 28. C. |
| 13. B. | 29. B. |
| 14. A. | 30. D. |
| 15. B. | 31. A. |
| 16. A. | |