



# **Driving Safety Refresher Course**

**Mount Graham International Observatory**

Original PPT by  
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# Purpose

- Help MGIO drivers understand aspects of driving safely in mountain habitat
- Promote understanding of UA and MGIO expectations

# Company policies

- MGIO Driving Policy
  - Personnel Memorandum
- Obey traffic laws
  - For example: seatbelt use required, follow speed limits, pass only in passing zones
- Valid drivers license required





# Driving Abstracts

- UA Risk Management
  - Reviews all UA drivers for driving violations
- UA Risk Management reporting system with accountable follow up for poor driving
- UA can deny driving privileges to employees based on:
  - Pattern of driving violations
  - One DUI conviction



# Driving Issues

- Passengers noticing driving issues or violations should bring them to driver's attention
  - and/or notify your supervisor
- Employees who commit safety violations are subject to disciplinary action
- Senior Managers and SO Safety Officer are authorized to remove driving privileges with reasonable cause



# **Avoid Accidents and Injury**

- Drive at speeds safe for road conditions
- All occupants must wear safety belts
- All drivers of UA vehicles must comply with Arizona State traffic laws and ABOR Policies

# CAUTION ! Hazards:

- Rough roads and dirt roads
- Narrow rural roads without shoulders, poor engineering
- One-lane bridges, blind curves, steep grades
- Large recreation vehicles, hunters, horses, deer, black bears or other large wildlife may suddenly appear
- Oncoming drivers may cross center line
- Steep drops, ditches, bridges and culverts with **NO guard rails**
- Poor or no visibility due to severe winter or monsoon weather – blizzards, heavy fog / heavy rain
- Bad weather such as ice, snow and severe wind storms
- Bicyclists, boulders, and trees (blow down) may be on the roadway



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# Defensive Driving

- Prepare yourself and vehicle
  - Check tire pressure, leaks, fluid levels, fuel level, clean windows and mirrors, review vehicle controls
  - Wear seat belt, adjust mirrors and seat position
  - Know how to change flat tires safely
- Follow posted speed limits
- Never cross solid **yellow** lines
- Never tailgate
- Eliminate distractions
  - No cell phone use when driving



# Defensive Driving

- Recognize hazards
  - Scan the road ahead
  - Check all mirrors every 3 – 5 sec.
  - Keep your attention focused on driving
- Understand the defense
  - Use “what-if” strategy to help keep your attention focused on driving
  - Avoid hazard in time to prevent collision
  - Take foot off gas and “Cover the brake”
- Keep a defensive attitude
  - Stay calm and courteous
  - Control emotions if cut off or tailgated
  - If upset, breath deeply and count to ten





**Speeding...**

**Don't  
Do  
It!**

- Reduces ability to negotiate curves / maneuver around obstacles
- Extends distance to stop vehicle
- Increases distance traveled while driver reacts
- Compromises integrity of vehicle structure
- Decreases effectiveness of air bags and seatbelts
- Decreases effectiveness of guardrails / barriers
- Increases risk of crashes
  - Other vehicles and pedestrians may not be able to judge distance accurately
- Increases wear and tear on vehicles increasing maintenance cost

# Mountain Driving

- Engine braking - downhill
  - Downshift on steep downhill grades
  - Don't over-rev, keep below ~5000 rpm
- “Snub braking” technique
  - Brake firmly until 5 mph below desired speed
  - Release brake, don't ride brakes!
- Shifting – uphill
  - Let the vehicle downshift if needed
- Slow Down
  - Gravel, ice and snow all have poor traction
  - Stopping distance much longer
- Night driving
  - Slow down
  - Low beams/fog lights in fog
  - No drowsy driving





# Winter Driving Ice & Snow

- Drive slowly
  - Everything takes longer... accelerating, stopping, turning
  - Give yourself time to maneuver – drive slowly!
- Increase following distance >10 seconds
  - Longer distance needed if you have to stop
- Don't stop if you can avoid it
  - Much more inertia is needed to start from a full stop than to get moving while still rolling
- When parking in freezing weather, avoid using the parking brake
  - The brake linings could freeze to the brake drum and disk. If necessary, block tires with rocks or other heavy objects.



# **Steward Observatory Safety Manual**

– Policy #42 – Mountain Travel and Habitat

- Emergency Contact Listing
  - Telephone and radio contacts – radio required on Mount Graham
- Safety Equipment
  - Fire extinguisher, crank flashlight, small shovel, ice scraper, first aid kit, butane mini-torch, emergency blanket, bag of sand, and basic tool kit, **fitted** tire chains (for all four tires)
- Read MGIO Orientation Package
  - Available on MGIO website:  
<http://mgio.arizona.edu>  
–tab– Visitor Information –tab– MGIO Orientation

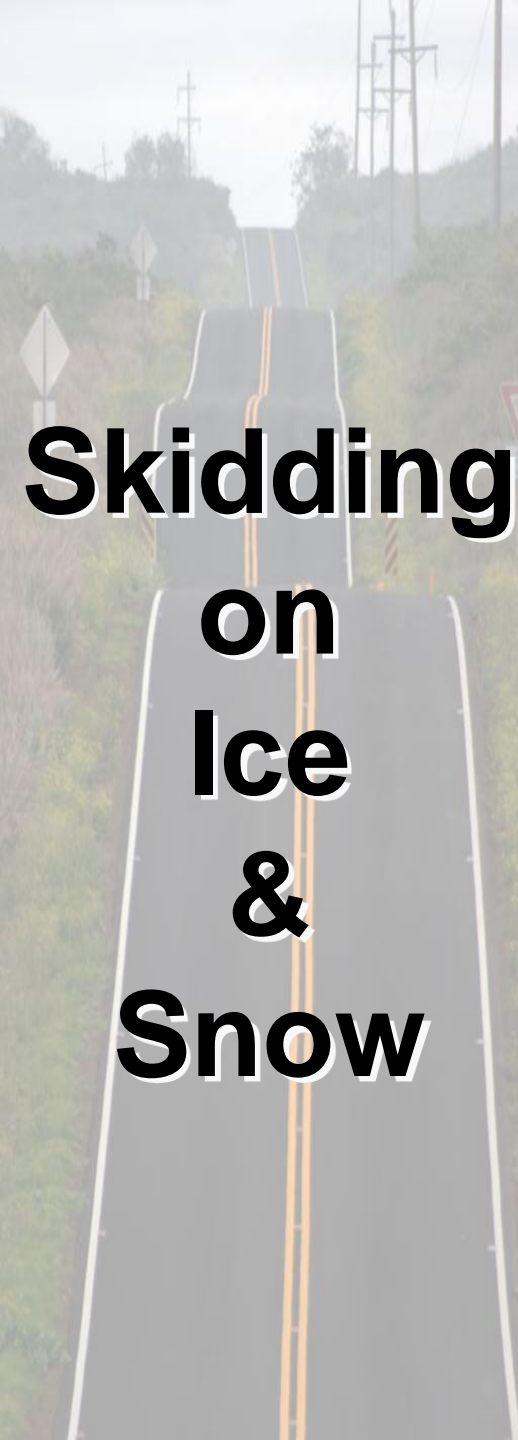
**Winter  
Driving  
Ice  
&  
Snow**

# Winter Driving Ice & Snow

- Don't over power up hills
  - Extra power gets wheels spinning
  - Get inertia going before you reach hill and let it carry you to top
  - At crest of hill, reduce your speed and proceed down hill as slowly as possible
- Don't stop going up a hill
  - Get inertia going on a flat before hill
- Use snow chains when required
  - Learn how to put on chains – all 4!
  - Chains used only on ice and snow
  - Remove when not needed



[LINK TO SNOW CHAIN VIDEO](#)



# Skidding on Ice & Snow

- Take foot off gas
- Slowly turn steering wheel in direction that rear end is moving
- Don't overcompensate steering
  - If car's rear end begins to fishtail to other side, slowly steer in that direction.
- Multiple “fishtails” are common
  - Stay calm and continue to steer in direction of rear end until car's path straightens out
- If necessary, stop vehicle after it has straightened itself and collect your thoughts





# Driving on Unpaved Roads

- Use 4WD on dirt road
  - Most 4WD vehicles have automatic hubs – if not you will need to set them manually
  - Speed limit of 25 mph maximum
- Windows kept closed and A/C on re-circulate
  - Keep dust out of vehicle
- On sharp “switch back” turns, your speed should be less than 15 mph
  - Extended stopping distance on dirt
  - Lack of guard rails
  - Narrow road
  - Vehicle can slide off the roadway

# Dirt Roads

- **Slow Down**  
and take your time



- More time to react to conditions
  - Rocks, grader berms, vehicles in your lane, blind corners, and narrow sections by culverts and curves
  - Hitting a rock or other obstacle can knock a hole in oil pan, differential or damage brakes
- Going slow helps
  - If you hit a rock and it catches underneath, it may stop or damage the vehicle
- When crossing grader berm -- slow down and cross at an angle
  - Wait for grader to reach a safe place or stops to pass

# SUV versus Sedan

- Handling
  - SUV is heavier and has higher center of gravity
  - SUV handles poorly in abrupt maneuvers
- Rollover
  - SUV is much easier to rollover
  - Rollovers are very dangerous for passengers
    - Seat belts and airbags less effective
- Braking
  - SUV stopping distance is longer





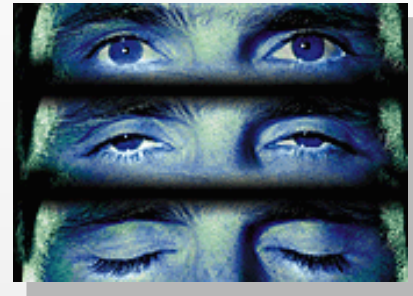
# SUV and Trucks

- Avoid sharp turns and abrupt maneuvers
- Drive at safe speeds for conditions
- Ensure tires properly inflated
- Never overload vehicle
- Make sure ***every passenger*** is properly restrained – UA Policy!
- In a rollover crash, unbelted person is significantly more likely to suffer serious injury



# Do you know when you're drowsy?

- You can't remember the last few miles
- You're not sure where you are on the road
- You drift out of your lane
- You wander across road and over correct
- You tailgate, or miss traffic signs
- You can't concentrate, your mind wanders
- You can't stop yawning
- You have trouble focusing your eyes
- You can't keep your eyes open
- You have trouble keeping your head up



# How to avoid driving drowsy

- Get 7 - 9 hours sleep every 24 hour period
- Sleep for a few hours after working and before driving
- Know the symptoms of drowsiness
- Stop immediately when you feel drowsy
- Take a short nap before resuming driving
- Ask someone else to drive
- Avoid alcohol and medications that make you drowsy





# Shift Workers

- **Tips to combat drowsy driving**
  - Make your bedroom dark and sleep at same time every day
  - Block or mask outside sounds
  - Lower temperature before going to bed
  - Maintain or improve your overall health
  - Avoid caffeine several hours before bedtime
  - Avoid alcohol several hours before bedtime
  - Know side effects of your medications
  - Close bedroom door, hang **Do Not Disturb** sign
  - Unplug the telephone in your bedroom
  - Develop a relaxing sleep ritual

# Cellular Phones

- List of vehicle phone numbers is located in glove box
- Do not use when driving
- Pull over to a safe place



***Don't phone and drive!***





# Vehicle Maintenance

- Before driving – complete “walk-around” inspection (see checklist)
- For urgent and serious **“Do Not Drive”** issues
  - “Red Tag” vehicle (take it out of service)
  - Notify your Supervisor
  - Ensure vehicle is not driven by putting note on keys
- Report other minor malfunctions



# What about Flat Tires?

- Don't drive far on flat tire
  - Drive slow speed, pull off road to a safe place
- Change flat tire with spare
  - Instructions in glove box
- Deposit damaged tire with MGIO staff
  - Staff will have tire repaired and returned
- Fixed tire will be returned to summit
- Original driver to replace original tire
  - or arrange for someone else to swap tires
- Original driver is responsible
  - follow through with process or delegate it



# Vehicle accidents

- See reference card in glove box
- Check the scene, Call 911 and Care for injured
- On Mount Graham, notify DPS, County Sheriff or UAPD immediately
- Obtain other driver's information and police report number
- Take photos if camera is available
- Call Base Camp or Facility Supervisor if towing is required
- Complete an incident report



# Housekeeping

- Smoking is not permitted in vehicles
- Remove personal effects, trash, etc.
- Transporting gas cylinders, dewars, large packages?
  - keep them ***well secured***
- At Base Camp, vehicle doors must be locked after working hours



# Please remember...

- Wear seatbelts
- Don't speed
- Don't cross solid yellow lines
- Don't tailgate
- Stay focused on driving
- Don't use cell phone
- Don't drive drowsy
- Don't drink and drive
- Drive defensively

**The life you save may be your own...**



# Thank YOU!

- Questions?