



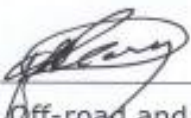
**ADVENTURE
INDUSTRY
ASSOCIATION**

Operating Four-Wheel Drive Vehicles in Off-road Conditions - Courses Curriculum

Approval page

The signatories hereof, being duly authorised thereto, by their signatures hereto authorise the execution of the work detailed herein, or confirm their acceptance of the contents hereof and authorise the implementation/adoption thereof, as the case may be, for and on behalf of the parties represented by them.

Author


SA AIA Off-road and Overlanding
Chapter Chairman: JJ du Plooy

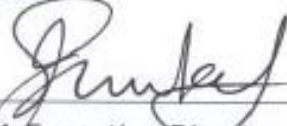
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1 Introduction

1.1 Aim

This curriculum provides the skills development partner (instructional designer, developer, facilitator and assessor) with the information and guidance necessary in terms of the following:

- a. purpose of this course;
- b. target group;
- c. prerequisites for the course;
- d. course duration;
- e. learning outcomes;
- f. critical cross-field outcomes;
- g. sequence of learning events;
- h. training delivery;
- i. assessment; and
- j. course evaluation.

1.2 Background

The South African Quality Authority (SAQA) unit standards applicable to operating four-wheel drive (4WD) vehicles were made dormant by SAQA/Transport Education and Training Authority (TETA) and the validity of the two unit standards will not be extended. The Quality Council for Trades and Occupations (QCTO) is not currently considering the replacement of the two unit standards listed below.

- a. **Unit standard 254135:** apply the techniques for operating four wheel drive (4WD) vehicles in on-road and off-road conditions.
- b. **Unit standard 254154:** apply advanced techniques for operating four wheel drive (4WD) vehicles in on-road and off-road conditions.

Due to the need for primarily recreational 4WD driver training in the adventure tourism industry, the South African Adventure Industry Association (SA AIA) decided to establish 4WD training curricula for its members. This is important because there is a definite need for standardised 4WD driver training.

It will also make it easier for SA AIA to maintain its own technical competence framework and keep it up to date and in line with industry trends and requirements.

1.3 Scope

The SA AIA courses for operating 4WD vehicles in off-road conditions are listed below.

- a. Introduction to techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions course.
- b. Basic techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions course.
- c. Advanced techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions course.

2 Purpose of the SA AIA courses

The aim is to prepare and equip owners and drivers of 4WD vehicles for the safe and responsible use of 4WD vehicles and equipment in South Africa.

3 Target groups

The members of these learner target groups will typically have the following profile:

- a. no previous or very little knowledge of legislation associated with off-road driving;
- b. no previous or very little knowledge of configurations, capabilities and limitations of 4WD vehicles;
- c. no previous or very little experience in driving a 4WD vehicle in off-road conditions;
- d. no previous or very little experience of recovery equipment; and
- e. no previous or very little experience in the practical use of recovery equipment.

The customer base associated with these target groups is identified below.

- a. **Commercial** – Government organisations and companies that are legally and/or professionally obliged to provide training to their employees. This also applies to individuals who require the necessary skills to use a 4WD vehicle as part of their duties, such as medical professionals, engineers, construction workers, tourism professionals, etc.

- b. **Recreational** – private individuals that buy a 4WD vehicle for recreational purposes. “Original equipment manufacturer (OEM) accredited training” with the focus on customers that buy 4WD vehicles is also included here.

4 Prerequisites for the courses

The prerequisites for the courses are identified below.

- a. Introduction to techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions
 - i. Learner must be able to communicate at NQF Level 2 in English.
 - ii. The learner must hold at least a Code B or EB driving licence, or any other licence deemed applicable under the legislation in force at the time, and must understand the knowledge required by road users.
- b. Basic techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions – Learner must have completed the Introduction to techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions successfully.
- c. Advanced techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions - Learner must have completed the Basic techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions successfully.

5 Courses durations

The durations of the courses are identified below. These include classroom time (theory), practical time (practical demonstrations, driving and recoveries), time spent on self-study and assessments (time spent on formative assessments as well as preparation time for the summative assessments where applicable).

- a. Introduction to techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions - 8 hours (typical 3 hours theory and 5 hours practical)
- b. Basic techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions - 8 hours (typical 3 hours theory and 5 hours practical)

- c. Advanced techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions - 16 hours (typical 6 hours theory and 10 hours practical)

6 Learning outcomes

Outcomes are the end products of learning that the learners strive to achieve at the end of a learning intervention in order to acquire the knowledge, skills and attitude to perform designated tasks. The learning modules, sections, units and outcomes for the courses are indicated in the paragraphs below.

Bloom's taxonomy is used in this curriculum to define outcomes and it provides a way to express learning outcomes in a way that reflects cognitive skills.

Below is a summary of Bloom's taxonomy principles used.

- a. The following 6 levels (lowest to highest cognitive skills) are used:
 - i. knowledge/remembering;
 - ii. comprehension/understanding;
 - iii. application/applying;
 - iv. analysis/analysing;
 - v. evaluation/evaluating; and
 - vi. synthesis/creating.
- b. Bloom's taxonomy is used to identify verbs to describe learners' learning. Examples of learning outcomes might include the following:
 - i. knowledge/remembering: define, list, recognise;
 - ii. comprehension/understanding: characterize, describe, explain, identify, locate, recognise, sort;
 - iii. application/applying: choose, demonstrate, implement, perform;
 - iv. analysis/analysing: analyse, categorise, compare, differentiate;
 - v. evaluation/evaluating: assess, critique, evaluate, rank, rate; and
 - vi. synthesis/creating: construct, design, formulate, organise, synthesise.

6.1 Introduction to techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions course

The learning modules, sections, units and outcomes for this course are indicated in the table below.

Table 1: Introduction to techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions course - learning modules, sections, units and outcomes

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcomes
1	General	1.1	General	1.1.1	Background information	1. Off-roading is the recreation of driving or riding a vehicle on unsurfaced roads or tracks made of materials such as sand, gravel, riverbeds, mud, snow, rocks and other natural terrain. 2. All South African legislation also applies to off-roading. These include licensing of vehicles, drivers' licences, road ordinances, road worthiness of vehicles etc. 3. Background to current off-road legislation. Need for legislation. Current off-road legislation. Implications of current legislation. 4. Driver competency. 5. Not all insurance companies cover off-roading as part of their normal insurance policies (local and abroad). 6. Medical aid when travelling abroad.	1. Identify what is off-roading. 2. Identify the current South African legislation associated with off-roading. 3. Identify the trail grading system used in South Africa and explain how it relates to the technical difficulty of an off-road trail. 4. Identify the short-term insurance implications when driving off-road. 5. Identify medical aid implications when driving off-road. 6. Identify the correct driving licenses when using a 4WD

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcomes
						7. The driver of a 4WD vehicle must hold the correct driving licence, as prescribed by the applicable legislation. 8. When towing a trailer or caravan, the driver of a 4WD vehicle must have the correct driving licence as prescribed by legislation.	vehicle or when towing with a 4WD vehicle.
2	Vehicle	2.1	Vehicle	2.1.1	Know your vehicle	1. Identify the major components and understand the basic working of a 4WD vehicle when driving off-road. 2. Approach angle, depart angle, break-over angle, roll-over angles (centre of gravity) and ground clearance. 3. Wading (fording) depth. 4. Width, height, weight and weight on the roof.	1. Identify the range of features, vehicle options and capabilities of the learner's 4WD vehicle. 2. Identify the difference(s) between a 4WD and an all-wheel drive (AWD) vehicle. 3. Identify the differences between the different weight specifications of a vehicle (e.g. tara, gross vehicle weight [GVW], etc.). 4. Identify the gross combined weight and length of a vehicle with a trailer/caravan and the implications thereof. 5. Identify the effect of packing weights and packing strategy (heavy and light items) on the roll-over angles of the vehicle. 6. Identify the importance of securing all loose items in and on the vehicle.

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcomes
							7. Identify the limitations of a 4WD vehicle in terms of angles, width, height, weight, ground clearance and wading (fording) depth. 8. Demonstrate the procedure to select high range and low range. 9. Identify preparations for river/water crossings with the implications thereof.
				2.1.2	Vehicle preparation for off-roading	Vehicle preparation for off-roading to ensure that the vehicle is ready for off-roading.	Identify the preparation of a vehicle for off-road conditions considering the outcomes of learning unit 2.1.1.
3	Driving skills	3.1	Driving skills	3.1.1	Communication during off-road driving	A guide can assist when driving through obstacles using verbal communication or hand signals when hearing is not an option.	1. Demonstrate hand signals used when driving off-road. 2. Demonstrate verbal communication of directions when driving off-road.
				3.1.2	Tyres	Tyre pressure is critical for successful off-roading. The correct tyre pressure for a vehicle depends on its type, the type of tyres fitted, their specifications, the vehicle's load and the road, trail or terrain to be driven on.	Identify correct tyre pressures considering the road/trail/terrain for the tyres fitted and the vehicle's load and the road, trail or terrain to be driven on.
				3.1.3	Driving obstacles	When riding off-road, the learner should be familiar with how to manoeuvre his/her	1. Demonstrate the correct seating position as well as the

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcomes
						vehicle on all types of terrain and in a variety of conditions.	position of the hands on the steering wheel when driving off-road. 2. Demonstrate correct lines when negotiating cross-axle obstacles. 3. Demonstrate correct driving of ascents and descents. 4. Demonstrate correct driving of side slopes.
4	Recovery	4.1	Recovery equipment	4.1.1	Recovery equipment	It does not matter how experienced one is, at some stage one will get stuck in an obstacle while driving off-road. It is important to be prepared, have the correct recovery equipment on a vehicle and know how to use it correctly.	1. Identify recovery equipment. 2. Identify the vehicle recovery triangle and the associated dangers of recovery. 3. Identify the different recovery methods and equipment. 4. Identify the ratings on recovery equipment and the importance thereof.
				4.1.2	Tyre pressure	Tyre pressure is critical for successful off-roading. The correct tyre pressure for a vehicle depends on its type, the type of tyres fitted, their specifications, the vehicle's load and the road, trail or terrain to be driven on.	1. Demonstrate the use of a tyre pressure gauge. 2. Demonstrate the use of an air compressor.

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcomes
				4.1.3	Recovery points	Various types of attachments can be found on vehicles. Only recovery points should be used for recoveries.	Identify the difference between a recovery point, a towing point and a tie down point.
				4.1.4	Required tools	Some thought should go into what tools will be needed in an off-road toolbox. The aim is to have enough on hand to put one in a position to repair the vehicle if it fails during the off-road trip in order to get back on the road.	1. Demonstrate the use of the jack and wheel spanner of the learner's vehicle. 2. Identify the tools required to perform basic maintenance on the learner's vehicle.
				4.1.5	Safety equipment	In order to enjoy the off-roading experience, take along the necessary safety equipment to make sure that your off-roading does not end in a nightmare experience. Also know how to use the safety equipment.	1. Identify the requirement for a first aid kit. 2. Identify the requirement to have sufficient drinking water in the vehicle. 3. Identify the requirement for a fire extinguisher.

Note: The trail grading, types of terrain covered (e.g. sand, gravel, riverbeds, mud and snow) and recovery procedures and equipment used during facilitation and assessments must be clearly stated. This information must be included on the learner's certificate.

6.2 Basic techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions

The learning modules, sections, units and outcomes for this course are indicated in the table below.

Table 2: Basic techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions course - learning modules, sections, units and outcomes

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
1	Vehicle	1.1	Vehicle	1.1.1	Know your vehicle	1. Identify the major components and understand the basic working of a 4WD vehicle when driving off-road. 2. The writing that one sees on the sidewall of tyres has two main purposes. The first is to help identify the size and specification of the tyres correctly. The second is to confirm that the tyre has been tested and approved to European and other country safety standards. 3. In order to accommodate the extra requirements of the vehicle manufacturers in relation to the performance of these vehicles, tyres had to change dramatically. Most manufacturers break down their range of 4x4 tyres into different categories, depending on the type and use of the vehicle. For instance, a high-performance 4x4 used predominantly for on-road application will require a relatively quiet, comfortable tyre	1. Identify the configurations of the learner's vehicle in term of part time 4WD, full time 4WD or all-wheel drive. 2. Identify the drivetrain components of the learner's vehicle in terms of engine, clutch, gearbox, transfer case, differentials, drive shafts and wheels. 3. Identify the types of tyres, markings on sidewall of tyres with emphasis on speed and load ratings. 4. Identify vehicle options in terms of SUV, single/double cab pick-up van, short wheel base and long wheel base with the limitations of these options. 5 Identify the different types of vehicle suspensions (e.g. dependent, independent, etc.). 6 Identify the off-road aids available in the learner's vehicle, such as diff lock, hill descent control, drive assist control,

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
						compared to a 4x4 that spends the vast majority of its life working off-road. 4. Approach angle, depart angle, break-over angle, roll-over angles and ground clearance. 5. Wading (fording) depth. 6. Width, height, weight and weight on the roof.	traction control, stability control, hill assist and anti-lock braking system and when to use what off-road aid in the vehicle. 7. Identify the limitations of a 4WD vehicle in terms of angles, width, height, weight, ground clearance and wading (fording) depth.
				1.1.2	Vehicle preparation for off-roading	Vehicle inspections are very important with regard to off-roading to ensure that the vehicle remains technically in an operational condition.	Identify the inspections of a vehicle before, during and after driving off-road.
				1.1.3	Vehicle modifications	While many off-road vehicles can drive 4x4 trails with a grading of 3, the desire of many off-roading enthusiasts is to endeavour much more challenging terrain. Changes made to the vehicle can negatively impact on handling, roll-over angles, etc.	Identify the implications and risks associated with vehicle modifications.
2	Driving skills	3.1	Driving skills	2.1.1	Operate a 4WD vehicle in off-road conditions	1. When riding off-road, the learner should be familiar with how to manoeuvre his/her vehicle on all types of terrain and in a variety of conditions. 2. Understand when to select the various configurations and driving aids of the vehicle	1. Demonstrate different driving approaches on-road, gravel and off-road. 2. Demonstrate the correct procedure to select high range and low range. 3. Demonstrate when to select high range and low range respectively.

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
						3. Understand the procedure(s) to select the various configurations and driving aids of the vehicle. 4. Heading uphill is tough. Descending downhill if you did not make it can be even tougher. The correct procedure must be followed.	4. Demonstrate when to use what off-road aid in the vehicle (diff lock, hill descent control, etc.). 5. Demonstrate descending hills on failed climbs (emergency hill start recovery). 6. Demonstrate driving the correct lines through obstacles on a grade 3 track/trail (ascents, descents, side slopes, ditches and dongas, veld conditions, grass, rocks, logs, ruts and rough terrain).
				2.1.2	Environmental impact	1. Be aware of the damage that can be caused to the environment. 2. Behaviour in the wild, and specifically in eco-sensitive areas, will determine whether this wonderful lifestyle will be available in future. When off-road driving is done responsibly, it has minimal impact on the environment.	Identify the environmental impact of off-road driving and how to minimise the impact thereof.
3	Recovery	3.1	Recovery equipment	3.1.1	Recovery equipment	It does not matter how experienced one is, at some stage one will get stuck in an obstacle while driving off-road. It is important to be prepared, have the correct recovery equipment on a vehicle and know how to use it correctly.	1. Identify the vehicle recovery triangle and the associated dangers of recovery. 2. Identify the use of gloves during a recovery. 3. Identify safe recovery procedures. 4. Identify self-recovery using a spade and the use of rocks and stones.

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
							5. Identify the correct use of shackles, pull (tow) straps and snatch (kinetic) straps and ropes. 6. Explain how to select the correct recovery equipment, considering its specifications, the GVM and the length and gross combined weight of the casualty. 7. Considering all the above outcomes, identify the implications of fitting aftermarket bumpers with integrated recovery points. 8. Identify the use and limitations of an emergency tyre repair kit.

Note: The trail grading, types of terrain covered (e.g. sand, gravel, riverbeds, mud and snow) and recovery procedures and equipment used during facilitation and assessments must be clearly stated. This information must be included on the learner's certificate.

6.3 Advanced techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions

The learning modules, sections, units and outcomes for this course are indicated in the table below.

Table 3: Advanced techniques for operating four-wheel drive (4WD) vehicles in on-road and off-road conditions course - learning modules, sections, units and outcomes

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
1	Vehicle	1.1	Vehicle	1.1.1	Know your vehicle	1. A basic understanding about torque, traction and wheel slip. 2. Centre of gravity relates not only to the ability to get up or down a slope, but also to the dreaded thought of rolling over.	1. Identify the power/torque distribution under off-road conditions. 2. Identify centre of gravity and effect thereof on roll-over angles. 3. Identify all the aspects that impact on centre of gravity and roll-over angles.
2	Driving skills	2.1	Driving skills	2.1.1	Operate a 4WD vehicle in off-road conditions	1. When riding off-road, the learner should be familiar with how to manoeuvre his/her vehicle on all types of terrain and in a variety of conditions. 2. Understand when to select the various configurations and driving aids of the vehicle 3. Understand the procedure(s) to select the various	1. Demonstrate the stopping distances on different surfaces (tar, gravel, mud, sand, snow, etc.) 2. Demonstrate driving the correct lines through obstacles on a grade 3 track/trail (sand or dunes, mud and snow and water/river crossings). 3. Demonstrate driving the correct lines through obstacles on a grade 5 track/trail. This is only done if the learner's vehicle is suited for grade 5 obstacles. ¹

¹ The learner is certified to drive trails with a grade 3 rating if grade 4 or 5 obstacles were not driven during the training event.

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
						configurations and driving aids of the vehicle.	
3	Recovery	3.1	Recovery equipment	3.1.1	Recovery principles	1. It does not matter how experienced one is, at some stage one will get stuck in an obstacle while driving off-road. It is important to be prepared, have the correct recovery equipment on a vehicle and know how to use it correctly. 2. Certain components of the vehicle as well as recovery equipment are exposed to serious mechanical forces during recoveries. 3. There is a risk of equipment failing during recoveries. Failed equipment flying through the air can cause serious bodily injuries or deaths. Safety procedures should be put in place during recoveries. 4. Communication during recoveries will not only make the recovery more effective, but it can prevent injuries or death. Communication during recoveries might differ from the	1. Identify various recovery forces and the importance as well as the dangers thereof. 2. Demonstrate safety procedures during recoveries. 3. Demonstrate communication during recoveries. 4. Demonstrate the use of safety equipment during recoveries.

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
						communication when being guided through obstacles. 5. Safety equipment was designed to assist with the safety aspects related to recoveries.	
		3.2	Practical recovery	3.2.1	Changing wheels	1. Changing wheels using the equipment supplied with the vehicle. 2. Changing wheels using equipment bought specifically for this purpose.	1. Identify when this type of recovery is used. 2. Demonstrate the use of a jack. 3. Demonstrate the use of a wheel spanner.
				3.2.2	Self-recovery	A recovery operation without a winch or second vehicle is very possible given enough time, planning and hard work. The main aim when attempting self-recovery is to remove the obstructions preventing the vehicle from moving. This is done by either digging in front or behind the wheels and chassis or by lifting the vehicle up from the surface, and filling in underneath or "throwing the vehicle over" to harder ground. Often the terrain is very soft and the vehicle will tend to sink in if it is driven or shaken too much, therefore one must make every	1. Identify when this type of recovery is used. 2. Demonstrate the use of a spade. 3. Demonstrate the use of an axe, panga, saw, etc. 4. Demonstrate the use of rocks and stones. 5. Demonstrate the use of sand ladders (traction boards). 6. Demonstrate the use of tyre chains. 7. Demonstrate the correct use of traction blocks. 8. Demonstrate descending hills on failed climbs (emergency hill start recovery).

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
						attempt to prepare the surfaces such that the vehicle has the best chance of getting out on the first attempt, if more work can be done to better the chances, do the work first before attempting to drive out.	
				3.2.3	Emergency tyre repair	Punctures and less serious damages to a tyre can be repaired without the need to remove the wheel from the vehicle or the tyre from the rim. This repair is temporarily and used to return to a tyre repair facility. In certain circumstances, it is possible for a tyre to come off the rim. More advanced techniques are required to put the tyre back on the rim.	1. Identify when this type of recovery is used. 2. Demonstrate the correct use of emergency tyre repair equipment. 3. Demonstrate the correct use of sidewall repair systems. 4. Identify the dangers involved in repairing the sidewall of a tyre. 5. Demonstrate the methods for putting a tyre back on the rim. 5. Explain the dangers of using propellant, such as that found in a can of DOOM, to put a tyre back on the rim, emphasising that this method should only be used as a last resort.
				3.2.4	Pull (tow) strap, shackles and	1. A vehicle is damaged or it broke down and need to be towed to a repair facility.	1. Identify when this type of recovery is used.

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
					towing a vehicle.	2. A vehicle is stuck and self-recovery will not be effective. 3. This type of recovery is not used in sand and mud. 4. Tow straps cannot be used with a snatch block as snatch blocks only work with cables and ropes.	2. Demonstrate the use of the correct shackles and tow strap (including the correct ratings of equipment). 3. Demonstrate the correct use of shackles and tow strap. 4. Demonstrate the correct method of joining tow straps. 5. Demonstrate the use of recovery points. 6. Demonstrate the correct use of safety lanyards. 7. Demonstrate the correct use of a recovery blanket.
				3.2.5	Snatch recovery	1. A vehicle is stuck and self-recovery will not be effective. 2. This type of recovery is used in sand and mud. 3. This type of recovery is not used to tow a damaged or broken down vehicle to a repair facility. 4. - The snatch strap/rope is probably the most dangerous of all recovery equipment or procedures. The basic principle is that of using inertia to un-stuck the vehicle - it is extremely effective as the stored energy is immense.	1. Identify when this type of recovery is used. 2. Demonstrate the use of the correct shackles and snatch/kinetic strap or rope (including the correct ratings of equipment). 3. Demonstrate the correct use of shackles and snatch/kinetic strap. 4. Demonstrate the correct method of joining snatch/kinetic straps or ropes 5. Demonstrate the use of recovery points. 6. Demonstrate the correct use of safety lanyards. 7. Demonstrate the correct use of a recovery blanket.

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
				3.2.6	High-lift jack	The high-lift jack consists of a mechanism with a single fork sticking out one side and a long lever on the other, the mechanism climbs up and down a long vertical rack. It is probably the single most dangerous device one will ever find relating to recovery.	1. Identify when this type of recovery is used. 2. Demonstrate the correct use of the high-lift jack. 3. Demonstrate the correct use of high-lift jack points. 4. Demonstrate the correct use of high-lift jack adapters.
				3.2.7	Exhaust bag jack	This is a large heavy duty bag that is inserted under the vehicle and then inflated using the exhaust of the stricken vehicle (provided the engine running).	1. Identify when this type of recovery is used. 2. Demonstrate the correct use of the exhaust bag jack. 3. Demonstrate the correct placement of the exhaust bag jack.
				3.2.8	Chains	Chains are particularly useful for attaching straps to vehicles not well equipped for off-road recovery.	1. Identify when this type of recovery is used. 2. Demonstrate the correct use of chains.
				3.2.9	Tyre chains	Chains linked to form a ladder and wound around each tyre are particularly useful when driving in snow or clay mud.	1. Identify when this type of recovery is used. 2. Demonstrate the correct use of tyre chains. 3. Demonstrate the correct placement of tyre chains.
				3.2.10	Winching	1. To get the best from a winch and auxiliary equipment requires some understanding of the	1. Identify when this type of recovery is used.

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
						mechanics involved in winching. For winching purposes the resistance to motion of a vehicle is dependent on 4 main factors. - The inherent resistance to movement of the vehicle. - The total weight of the vehicle. - The nature of the surface to be traversed. - Gradient resistance. 2. The most important aid to successful winching (after the winch) is the snatch block, which can be used to increase the pulling power of the winch or for indirect pulls. Snatch blocks can be used in two modes. - Attached to the load. - Secured to an anchor point.	- Demonstrate the correct use of winching formulae. - Demonstrate the correct use of anchor straps/tree protection. - Demonstrate the correct use of snatch blocks. - Demonstrate the correct use of a winch extension/pull strap. - Demonstrate the use of the correct shackles (including the correct ratings of equipment). - Demonstrate the correct use of shackles. - Demonstrate the correct method of joining winch extension straps. - Demonstrate the use of recovery points. - Demonstrate the correct use of safety lanyards. - Demonstrate the correct use of a recovery blanket. 2. Demonstrate the use of the correct shackles and snatch/kinetic strap or rope (including the correct ratings of equipment). - Demonstrate the correct use of shackles and snatch/kinetic strap. - Demonstrate the correct method of joining snatch/kinetic straps or ropes - Demonstrate the use of recovery points.

Learning module		Learning section		Learning unit			
No	Description	No	Description	No	Description	Content (including but not limited to)	Outcome
							6. Demonstrate the correct use of safety lanyards. 7. Demonstrate understanding of the difference between types of winch cables. 8. Demonstrate the correct use of different winching layouts (with the implications on recovery and anchor points). 9. Demonstrate the correct use of the winch.
				3.2.11	Tyre repairs		1. Identify when this type of recovery is used. 2. Demonstrate the correct use of tyre levers. 3. Demonstrate the correct procedure to remove a tyre from the rim. 4. Demonstrate the correct procedure to fit a tube in the rim. 5. Demonstrate the correct procedure to fit a tyre to the rim.

Note: The trail grading, types of terrain covered (e.g. sand, gravel, riverbeds, mud and snow) and recovery procedures and equipment used during facilitation and assessments must be clearly stated. This information must be included on the learner's certificate.

7 Critical cross-field outcomes

The critical cross-field outcomes listed below are embedded in the training methodology and activities during presentation of training.

- a. Identify and solve problems using critical and creative thinking processes are addressed when identifying potential hazards and recognising existing hazards and dangerous situations and identifying ways to eliminate or minimise them when operating a 4WD vehicle in various conditions and terrains.
- b. Work effectively with others as a member of a team, group, organisation or community are addressed when imparting the necessary skills and knowledge to participants in various 4WD operating conditions.
- c. Organise and manage oneself and one's activities responsibly and effectively are addressed when maximising use of 4WD features and uses in various operating conditions.
- d. Collect, analyse, organise and critically evaluate information when collecting information on and understanding all the vehicle features, tools and maintenance procedures in various operating conditions.
- e. Communicate effectively using visual, mathematical and/or language in the modes of oral and/or written persuasion are addressed when conveying information pertaining to operating conditions, etc. to other drivers and passengers in the vehicle.
- f. Demonstrate an understanding of the world as a set of interrelated systems is addressed when recognising the potential negative effect undisciplined use of 4WD vehicles can have on the environment and on other road users as well as understanding the effect of terrain, weather conditions and other road users on a vehicle and its safety.
- g. Participate as responsible citizens in the life of local, national and global communities ensuring that environmental conditions and safety and health procedures relating to 4WD vehicle activities are adhered to.

8 Sequence of learning events

The learning units of these courses are presented in a linear manner. Learning units may be sequenced to suit the requirements of the learning event.

9 Training delivery

9.1 Training methods

The training methods that are used during the courses are described in the table below.

Table 4: Training methods

Methodology	Description
Demonstration	A technique that shows how something works or gets done. It is intended to illustrate or clarify an idea, process, or relationship.
Drill and practice	The learner learns the content by means of exercises. These exercises can be done more than once. This learning method is best used when teaching processes and certain abilities.
Group discussion	The group discussion method enables learners to think deeply and come to a conclusion about a topic. Learners focus on a single item or problem. Interactive skills are developed and the teamwork approach has a positive effect on attitudes and motivation. Facilitators will encourage discussions.
Reading (self-study)	Readings are the printed matter assigned to individuals in the form of articles, books, or pamphlets. Readings are often coupled with a study guide or discussion question for use during a class session.
Interactive demonstrations	Interactive demonstrations allow learner watchers to do something instead of merely observe. Job Instruction Training (JIT) is a perfect format for this.
Note-taking	For some people note-taking may be necessary to “imprint” the data. These people need to hear it, see it in the visual aids, and then to see it again as they begin to “own” the idea by writing it down themselves.
Questioning	The questioning strategy consists of developing and asking a variety of questions designed to test learning and stimulate discussion.
Scenario	The learners are presented with a scenario and they have to analyse the situation and arrive at a conclusion using their critical thinking and judgement skills.
Simulation	Simulation is a representation of a real-life situation - usually a situation requiring appropriate actions and reactions or a situation requiring the demonstration of technical expertise.

9.2 Training media

The media used to facilitate these courses include a whiteboard, flip charts, computers, multimedia data projectors and training aids.

9.3 Training facilities

These courses must be held at a suitable venue with a lecture room and toilet facilities, as well as a 4x4 track/trail.

10 Assessment

10.1 Assessment process

Assessment is a process of collecting evidence in order to determine whether learners have achieved the specified learning outcomes. These learning outcomes will serve as the basis for the assessment due to the fact that they are linked to predetermined assessment criteria. The main steps in the assessment process are indicated below.

- a. The assessor plans and explains the assessment process to the learners.
- b. The assessor judges the performance of the learners against the learning outcomes and assessment criteria. In this the assessor uses applicable assessments instruments.

The assessor will ensure that the assessment process adheres to the principles as listed in the table below.

Table 5: Applicable assessment principles

Methodology	Description
Fair	Learners are assessed using the same assessment methods and tools.
Valid	The assessment measures what it is supposed to measure/assess.
Reliable	The same results will be obtained even if the assessment is conducted by different assessors.
Practicability	The assessment is relevant to the level of knowledge, skill and attitude that it assesses.

If learners are not satisfied with the manner in which the assessment process was executed, they may launch an appeal against the assessment process in writing.

10.2 Assessment methods, tools and techniques

The assessor will judge the collected evidence of performance against the learning outcomes and assessment criteria by using a wide range of methods, tools and techniques. This includes verbal questioning, observing and assessment of learner product.

The assessment methods and tools will enable learners to produce authentic, current and sufficient evidence for the assessor to make a fair judgement in terms of their competence.

10.3 Assessment

Informal formative assessments will be conducted during the facilitation process to monitor learners' progress and determine whether they have acquired knowledge, skills and attitudes. Any areas requiring further attention will be addressed and reassessed. For learners from the recreational customer base (paragraph 3), formative assessments may be sufficient to issue an attendance certificate unless a learner requires summative assessments for personal reasons (competency certificate).

Summative assessments will be used for learners from the commercial customer base (see paragraph 3). A competency certificate must be issued to learners from this customer base.

10.4 Course and assessment requirements

Learners will be required to demonstrate knowledge, understanding and application (as applicable) of the outcome(s) of the learning units in order to be deemed competent against the requirements of a specific SA AIA course. These outcome(s) are identified in paragraph 6 of this curriculum.

The assessor will provide verbal feedback to the learner and clearly indicate whether the learner is competent or not yet competent.

Verbal motivation will be provided to a learner when a learner is not yet competent immediately after conclusion of the course. This will be followed by a written report to the learner within 7 working days from the course date detailing the reasons for the decision of the assessor as well as the proposed corrective actions.

11 Course evaluation

11.1 Evaluation by the learner

After completion of the course, the learners provide formal course feedback that addresses the following:

- a. facilitator preparation;
- b. venue and equipment;
- c. track/trail;
- d. facilitation;
- e. learning material;
- f. training aids;
- g. assessments; and
- h. general comments.

11.2 Evaluation by the facilitator

After completion of the course, the facilitator compiles a course review report. This report indicates the learner results as well as any issues and/or incidents that need to be addressed to improve future courses.

12 Annexures

12.1 Annexure A: referenced and applicable documents

12.1.1 Referenced documents

- a. Bloom's Taxonomy of Educational Objectives (published in 1956 and revised in 2001)

12.1.2 Applicable documents

None.

12.2 Annexure B: abbreviations

Abbreviation	Description
4WD	4 wheel-drive
AWD	all wheel drive
GVM	gross vehicle mass
OEM	original equipment manufacturer
QCTO	Quality Council for Trades and Occupations
N/A	not applicable
NQF	National Qualifications Framework
SA AIA	South African Adventure Industry Association
SAQA	South African Qualifications Authority
TETA	Transport Education Training Authority
US	unit standard