Australian Government

Department of Education, Employment and Workplace Relations

AURM441438B Manage motorsport data acquisition

Release: 1

AURM441438B Manage motorsport data acquisition

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency describes the skills and knowledge required to configure a data acquisition system and to analyse and present motorsport data. It requires the ability to analyse data requirements, configure an electronic system and retrieve, analyse and present data in various forms, including charts, graphs, tables, comparisons and reports. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit	This unit applies to individuals who undertake the identification of data acquisition needs of a motorsport team and configure a system so as to retrieve, analyse and present the data. Data may be related to weather, circuit, driver/rider characteristics, systems capability and vehicle design specifications.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		
	AURE218708A	Carry out repairs to electrical circuits/systems

Prerequisite units		
	AURM340312B	Collect and log motorsport data
	MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm data acquisition requirements	1.1. Use controlling body rules, category rules, supplementary regulations and team requirements to specify task requirements, including configuration, equipment, quality and quantities 1.2. Access and interpret benchmark specifications for a correctly functioning 1.3. Observe occupational health and safety (OHS) requirements, including regulatory requirements, equipment and system isolation requirements, and personal protection needs, throughout the work
2. Configure electronic data acquisition systems	2.1. Select and prepare tools and material to support the data acquisition process 2.2. Calculate and enter component rates/ratios and parameters for input sensors within system math channels 2.3. Enter sample rates most suited to particular data logging channel 2.4. Conduct system check in accordance with regulatory, manufacturer/component supplier and team requirements
3. Retrieve data	3.1. Use team instructions and procedures to identify data retrieval requirements for specific purposes 3.2. Follow data retrieval process in accordance with specifications and directions 3.3. Verify data retrieved, where appropriate, by using reliable alternate or optional processes 3.4. Identify variables and potential for inaccurate results
4. Analyse data	4.1. Compare all sources of collected data 4.2. Analyse data using mathematical processes 4.3. Analyse trends and patterns in data including non-conforming results outside of the predicted outcomes 4.4. Investigate possible reasons for trends and patterns 4.5. Identify potential performance enhancement solutions 4.6. Report problems with the required data and/or the operation of the equipment to appropriate persons
5. Present data	5.1. Identify end users of statistical data and their preferred format

ELEMENT	PERFORMANCE CRITERIA
	5.2. Represent data to meet the needs of the end user 5.3. Document appropriate recommendations 5.4. Present recommendations with supporting data
6. Clean up work area and maintain equipment	6.1. Clean, maintain and prepare equipment ready for future use and store in accordance with manufacturer/component supplier specifications and team requirements 6.2. Remove waste material according to team procedures 6.3. Diagnose faults in acquisition systems and components 6.4. Document unserviceable equipment and faults and take appropriate action in accordance with team procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to configuring data acquisition systems, retrieving and presenting collected data
- communication skills to the level required to communicate ideas and information to enable clarification of work requirements, coordination of work with team members, and reporting of work outcomes and issues
- literacy skills to the level required to collect, organise and understand information related to configuring data acquisition systems, retrieving and presenting collected data, and the analysis of data system requirements for end users
- numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurements and calculations required during the configuration of data acquisition systems and presentation of data
- problem-solving skills to the level required to use problem-solving techniques to anticipate changing information requirements and influences
- team skills to the level required to work with others to foster the team, recognise dependencies, and use cooperative approaches to optimise workflow and productivity

REQUIRED SKILLS AND KNOWLEDGE
• planning skills to the level required to plan and organise activities, including the coordination of data acquisition equipment, systems and materials to avoid backtracking, workflow interruptions or wastage
Required knowledge
Required knowledge includes: • data acquisition channel requirements, including types, characteristics, uses and limitations of signal devices/sensors • methods for determining/calculating component rates and ratios • configuration, inspection and system checks of data acquisition systems • operation of data acquisition systems and the inputting of variables • data retrieval processes and techniques • data analysis principles, techniques and methodology, including associated mathematical formulae • types of statistical representations of motorsport data, users of the data and their preferred format of data display • mathematical processes to arrange data • data comparison methods • data presentation methods • data acquisition system fault diagnosis • procedures for reporting equipment faults and data defects • applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including OHS, personal safety and environment, relevant to managing data acquisition

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently:
	• interpret and apply team requirements, controlling body and category rules and supplementary regulations
	• apply safety requirements, including the isolation of equipment and the use of personal protective equipment
	• follow task instructions, operating procedures and inspection processes to:
	  • minimise the risk of injury to self or others
	  • prevent damage to competition vehicle or equipment
	  • achieve required outcomes within team time and quality standards
	• correctly configure data acquisition, acquire, analyse and present motorsport data on a minimum of two (2) occasions. At least one (1) of these must be an appropriate event, and cover each of the following:
	  • vehicle data
	  • weather data
	  • circuit data
	  • driver/rider characteristics
	• retrieve data within relevant team quality and timeliness standards
	• work effectively with others
	• modify activities to cater for variations in workplace context and environment
	• follow team data security and confidentiality procedures.

Context of, and specific resources for assessment	• The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment. • Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints. • Assessment is to comply with relevant regulatory requirements, including specified Australian standards.

EVIDENCE GUIDE	

	• Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
	• The following resources should be made available:
	  • team requirements
	  • access to data acquisition system and associated material and equipment
	  • information on work specifications
	  • organisational procedures
	  • safety procedures, regulations and quality standards.

Method of assessment	• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package. • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge. • Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application. • Assessment may be applied under project-related conditions (real or simulated) and require evidence of process. • Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances. • Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.
Guidance information for assessment	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

RANGE STATEMENT
The range statement relates to the unit of competency as a whole. It allows for different

RANGE STATEMENT	
work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Tools and equipment	Tools and equipment may include: • data acquisition tools • multimeters • computers • hand-held calculators • mathematical tables • graphing and charting equipment
OHS requirements	OHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include: • personal protective equipment and clothing • safety equipment • first aid equipment • hazard and risk control • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures • team insurance requirements • material safety management systems • controlling body requirements • manufacturer/component supplier specifications • local safe operating procedures
Legislative requirements	Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include: • award and enterprise agreements • industrial relations • Australian standards • Australian Design Rules • confidentiality and privacy

RANGE STATEMENT	
	• OHS • the environment • equal opportunity • anti-discrimination • duty of care • health regulations

Information and procedures	Information and procedures may include:
	• controlling body rules, category rules and supplementary regulations
	• event scheduling and location details
	• team procedures and standards related to:
	  • managing motorsport data acquisition
	  • reporting and communication
	  • use of tooling and equipment
	  • emergency service contacts and team persons emergency contacts
	  • team emergency and event procedures for accidents or injury
	• work instructions, including worksheets, material safety data sheets (MSDS), assembly procedures, plans, drawings, designs and checklists
	• manufacturer/component supplier specifications and application procedures for test equipment and material
	• Australian Design Rules (where applicable)
	• safety body publications
	• environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents

Unit Sector(s)

Unit sector	Motorsport

Co-requisite units

Co-requisite units		

Competency field

Competency field	