2024 - 2027

APPLIED VOCATIONAL CERTIFICATE IN

ENGINEERING TECHNOLOGY

Version 1: September 2024

GOVERNMENT OF MALTA
MINISTRY FOR EDUCATION, SPORT, YOUTH, RESEARCH AND INNOVATION
DIRECTORATE FOR STEM AND VET PROGRAMMES

Applied Vocational Certificate Programme

The Applied Vocational Certificate (AVC) programme is designed to emphasize the practical application of vocational subjects, providing students with hands-on experience directly related to the workplace. This programme is aligned with the Malta Qualifications Framework (MQF) and offers a final certification at MQF Level 3, with exit points at MQF Levels 1 and 2. To earn the final certificate, candidates must complete all three units over the secondary cycle and meet the requirements for coursework and controlled assessments as outlined in the specific subject syllabi.

The AVC programme focuses on equipping candidates with both theoretical knowledge and practical skills relevant to specific industries, preparing them for future employability or education. This skills-based approach ensures that students develop the competencies necessary for the workforce while also providing a clear pathway for academic progression. The programme supports continuous learning, with opportunities to advance to post-secondary institutions that offer courses at MQF Levels 1-3, and potentially even higher, such as MQF Level 4. Recognized and accredited by various educational institutions, the AVC programme represents a vital step in the lifelong learning journey, aligning with both industry needs and educational standards.

Spanning over three scholastic years (Years 9, 10 and 11) and comprising 10 credits, the AVC programme fosters the development of technical and vocational skills in specific industries. This structure supports the holistic growth of candidates, preparing them not only for future employment but also for future academic pursuits in line with this policy's objectives and the relevant subject syllabi.

Subject Programme

The aim of this Applied Vocational programme in Engineering Technology is to provide candidates with the underpinning knowledge related to the world of engineering technology. By the end of the programme, candidates are expected to have gained sufficient skills and knowledge and be able to apply them.

Programme Learning Outcomes

At the end of the programme, I can:

- Work safely in an engineering environment.
- Carry out basic risk assessments.
- Respond effectively to help persons when an incident occurs.
- Interpret different types of documentation.
- Use tools and machinery in the appropriate manner.
- Carry out simple tests on different materials.
- Manufacture electrical and electronic circuits using different methods.
- Construct an electro-mechanical project using tools and machinery.
- Conduct basic tests on different circuits to identify faults.

Assessment

The assessment of the applied vocational certificate in Engineering Technology along the three years is based on coursework and controlled assessment leading to the global mark.

Year 9	Year 10	Year 11
Coursework (assignment 1)	Coursework (assignment 1)	Coursework (assignment 1)
Coursework (assignment 2)	Coursework (assignment 2)	Coursework (assignment 2)
Controlled assessment	Controlled assessment	Controlled assessment

The Ks, Cs and As of each unit, making up the coursework and controlled assessment, are of varying percentages.

The mark obtained by the candidates are to be inputted on MySchool platform each scholastic year.

Scheme of Assessment

Every assignment should include at least **ONE** knowledge criterion and at least **ONE** application criterion.

Assignment	Type	Percentage distribution
1	Coursework	24 – 42%
2	Coursework	24 – 42%
3	Controlled	24 – 42%

Coursework

The coursework refers to assignment 1 and 2 which are made up of a written and practical component. The assignment briefs will be prepared by the teacher and internally verified. Assignments together with evidence of practical work and artefacts are considered as the portfolio for each year.

Controlled Assessment

The controlled assessment will be issued by the Education Assessment Unit (EAU) between April and May. Assessment decisions will be internally verified.

Programme Certification

Upon completion of the three-year programme, candidates will receive a certificate and a certificate supplement indicating the MQF Level achieved. Each applied vocational subject within the AVC programme is structured to be qualified at MQF Level 3, with possible exit points at MQF Level 2 or MQF Level 1. The final qualification level depends on the total marks obtained by the candidate over the three years (with a maximum of 300 marks) as indicated in the table.

Candidates who are absent for an entire year of the programme can qualify up to a maximum of MQF Level 2, while those absent for two full years can qualify up to a maximum of MQF Level 1.

Award	Marks throughout the Subject	Grade
MQF Level 3	270– 300	1
	240 – 269	2
	210 – 239	3
	180 – 209	4
	150 – 179	5
MQF Level 2	120 – 149	6
	90 – 119	7
MQF Level 1	60 – 89	8
	0 – 59	Fail

Quality Assurance

Assessment is a fundamental component of the learning process. It provides candidates with feedback on their progress and achievements while adhering to key standards of reliability, validity, and fairness. To maintain these standards, it is crucial to follow established rules and procedures. The assessment guidelines ensure that all evaluations are:

- Aligned with the appropriate standards, quality, and level.
- Fair and equitable to all students.
- Valid and reliable.

In order to ensure quality, assignment briefs and assessment decisions undergo internal verification by the designated internal verifier. This process ensures that assessments align with the intended learning outcomes and comply with established policy procedures. Furthermore, moderation will be conducted each academic year by moderators that will evaluate candidates work based on a specified rubric and moderation criteria ensuring that work has been fairly, accurately and consistently graded. During both internal verification and moderation, candidates' marks are subject to change.

Unit 1: Manufacturing Processes

Unit Learning Outcomes

At the end of the unit, I can:

LO 1. Demonstrate an understanding of Health and Safety practices while working in an engineering context.

LO 2. Make use of measuring and marking out tools on materials with specific properties.

LO 3. Make appropriate use of tools and equipment used for cutting materials.

LO 4. Make use of permanent and non-permanent joining processes.

LO 5. Finish a product according to set requirements.

Unit Content

Subject Focus	Health and Safety
LO1	***Demonstrate an understanding of Health and Safety practices while working in an engineering context.***
K1	Use appropriate personal protective equipment when carrying out an engineering activity.
	Personal and Protective Equipment (PPE): overalls, safety shoes, safety boots, safety glasses, safety goggles, welding mask, face shield, mask, respirators, harnesses, hard hats, safety gloves, earmuffs, ear plugs.
K2	Choose FOUR safety signs for a given scenario/s.
	Purpose of safety sign colours: • Red signs: prohibition **or** danger **or** firefighting equipment. • Yellow signs: warning. • Blue signs: mandatory. • Green signs: no danger **or** emergency escape **or** first aid. *N.B Safety signs are to be covered in respect to their colours and pictogram.*
	Safety signs: no smoking, not drinkable, no access for pedestrians, no access for unauthorised persons, fire extinguisher, do not extinguish with water, flammable material, toxic material, overhead load, industrial vehicles, danger of electrocution, general danger, safety overalls must be worn, safety helmet must be worn, eye protection must be worn, face protection must be worn, emergency exit, first aid, eyewash. *N.B. During delivery reference should be made to Subsidiary Legislation 424.16. (https://legislation.mt/eli/sl/424.16/eng/pdf)*
C1	Recommend how an engineering activity can be improved in terms of health and safety.
	Appropriate PPE, Machine safety guards, Risk assessment and any other improvement which makes sense to the given engineering activity.

Subject Focus	Measuring and marking out on different materials
LO2	***Make use of measuring and marking out tools on materials with specific properties.***
K3	Distinguish differences between TWO materials and their form of supply as part of an engineering task.

	Materials:
	• Metals:
	  ○ Ferrous and Non-ferrous
	  ○ Ferrous alloys and non-ferrous alloys

	Ferrous metals contain iron. Non-ferrous metals do not contain iron. • Composites *Materials which are formed by combining and bonding two or more materials.* • Polymers: ○ thermosetting, thermoplastics *Thermoplastics can be heated and shaped many times. Thermosets can only be heated and shaped once.* • Woods (timbers): ○ hardwoods, softwoods *The classification depends on the cellular structure of the tree.* • Ceramics *Materials that are inorganic and non-metal, generally formed from blends of clay, earthen matter, powders, and water.*
	Forms of supply: Bar, sheet, pipe, rod, wire, castings, forgings, extrusions, planks, sheets, dowels, mouldings, beams, film, sheet, pallets, powder, sand, extrusions, castings, pipe, rod, liquid.
K4	Outline the function of TWO measuring and TWO marking-out tools.
	• Measuring tools: steel ruler, measuring tape, protractor, height gauge, Vernier calliper, micrometre, engineering/try square, sliding bevel, combination square, surface plate. • Marking out tools: scriber/marking knife, centre punch, chalk line, dividers/ callipers, blueing or paint, scribing block, mortise gauge, centre square.
C2	Produce sketches to communicate ideas and information with other individuals related to measuring and marking out task.
	Produce a 3D sketch according to specifications, Neatness, Precision, physical handling of drawing, folding method. *N.B. Sketches should be drawn by hand with minimal instruments*
C3	Produce simple engineering drawings, according to given instructions and related to measuring and marking out task.
	Drawing a 2D drawing according to specifications, Neatness, Precision, physical handling of drawing, folding method, use of various types of lines, orthographic projections *N.B. Drawings are to be produced using drawing instruments or software*
A1	Design a template to be used to transfer a design on material
	Design of template: accuracy to a maximum of 5mm
A2	Use measuring and marking out tools to carry out a given task.
	Measuring Marking out tools: Use appropriate tools, accuracy, correct use of tool, considering material waste

Subject Focus	Cutting Materials
LO3	***Make appropriate use of tools and equipment used for cutting materials.***
K5	Outline the safe use of FOUR different cutting equipment.
	Cutting equipment: saws, hack saw, milling machine, lathe, angle grinder, band saw, metal cutting bandsaw, circular saw, jigsaw, scroll saw, taps and dies, craft knife.
	Preventive measures when using cutting tools: wear appropriate PPE, use suitable tool for the proper job, visual inspection of the tool, work to laid down procedures, do not remove or disable guards, do not remove or disable safety devices on machinery, remove loose clothing, tie back long hair and remove jewellery.
A3	Make appropriate use of cutting equipment in a given cutting task.
	Use of proper tools, use of tools properly, accuracy to a maximum of 5mm, considering material waste.

Subject Focus	**Joining Materials**
LO4	***Make use of permanent and non-permanent joining processes.***
K6	Outline the function of FOUR equipment used for joining materials.
	Tools and equipment for making joints: hammers, rivet guns, screwdrivers, spanners/sockets, filling knife/blade, Allen/torque keys, adhesives, chisels, router, welding sets, brazing torch, plastic welding.
A4	Assemble an artefact by using joining tools according to the given information.
	Correct use of tools, correct process, accuracy to a maximum of 5mm

Subject Focus	**Finishing**
LO5	***Finish a product according to set requirements.***
K7	Outline the function of FOUR finishing equipment.
	Finishing tools: spray gun, paint brush, sander, buffer, file, emery cloth, sand-paper sanding block.
K8	Evaluate an artefact according to given specifications.
	Specifications: Dimensions, accuracy, finishing quality, skills, overall aspect.
A5	Use finishing tools and/or equipment to carry out a specific task.
	Correct use of tools, correct process, neatness

Knowledge criteria – 4 marks max				
		0	**1-2**	**3-4**
LO1	**K-1.** - Use appropriate personal protective equipment when carrying out an engineering activity.	• PPE not used or used PPE completely out of place. • PPE not present at school.	• The student rarely wears the necessary PPEs without prompting for the engineering activity.	• The student mostly / always wears adequate PPE for the engineering activity. The PPE selection is correct. • The student demonstrates an understanding of the importance of PPE and adheres to safety procedures.
	K-2. Choose FOUR safety signs for a given scenario.	• Signs not chosen or chosen completely wrong	1 Mark for each correct sign	
LO2	**K-3.** Distinguish differences between TWO materials and their form of supply as part of an engineering task.	• Unable to distinguish between different materials and their form of supply.	• Understanding between the materials is limited. Superficial explanations were provided. • Struggles to identify forms of supply of material.	• Good understanding of differences between the materials. Good explanations were provided. • Identifies clearly the forms of supply of each material.
	K-4. Outline the function of TWO measuring and TWO marking-out tools.	• Question was not attempted or completely wrong.	1 mark for each answer	

LO3	**K-5.** Outline the safe use of FOUR different cutting equipment.	• Question not attempted or completely wrong.	1 mark for each answer	
LO4	**K-6.** Outline the function of FOUR equipment used for joining materials.	• Question not attempted or completely wrong.	1 mark for each answer	
LO5	**K-7.** Outline the function of FOUR finishing equipment.	• Question not attempted or completely wrong.	1 mark for each answer	
	K-8. Evaluate an artefact according to given specifications.	• Question not attempted or completely wrong.	• Conducts a basic evaluation of the artefact, identifying only one aspect within the given specifications.	• Conducts a comprehensive evaluation of the artefact, accurately assessing its alignment with the given specifications.

Comprehension criteria – 6 marks max					
		0	**1-2**	**3-4**	**5-6**
LO1	**C-1.** Recommend how an engineering activity can be improved in terms of health and safety.	• Recommendations not carried out or completely out of point	• Limited recommendations are provided with little consideration for practicality or effectiveness.	• Recommendations cover some safety measures, but additional suggestions may be needed to ensure comprehensive risk mitigation.	• Detailed recommendations are provided for implementing a wide range of safety measures, addressing all identified hazards and risks effectively.
LO2	**C-2** Produce sketches to communicate ideas and information with other individuals related to measuring and marking out task.	• Sketches not carried out or completely out of point	• Sketches are not clear or incomplete, with a lack or minimal detail.	• Sketches are somehow understandable but not fully detailed.	• The sketches are clear, detailed, and easily interpreted, facilitating excellent communication.
	C-3 Produce simple engineering drawings, according to given instructions and related to measuring and marking out task.	• Engineering drawings not carried out or completely out of point	• Engineering drawings are not clear or incomplete, with a lack or minimal detail.	• Engineering drawings are somehow understandable but not fully detailed.	• Engineering drawings are clear, detailed, and easily interpreted, facilitating excellent communication.

Application Criteria – 10 marks max					
		0	**1-3**	**4-6**	**7-10**
LO2	**A-1** Design a template to be used to transfer a design on material.	• Task not carried out or completely wrong.	• The template is not complete. • The template design is far from being accurate. • The template's edge is not sharp enough to make a good transfer process.	• The template is complete but not accurate. • The template is cut close to the design markings with decent edge cutting. • The template will make decent replicas.	• The template is complete and very accurate. • The template is cut accurately on the designed markings. • The template will make very good replicas.
LO2	**A-2** Use measuring and marking out tools to carry out a given task.	• Task not carried out or completely wrong.	• Less than half of the measuring and marking out tools are used. • Markings are far from precise.	• More than half of the measuring and marking out tools are used. • Markings are not precise but good to work with.	• Most or all of the measuring and marking tools are used correctly. • Markings are clear and accurate.
LO3	**A-3** Make appropriate use of cutting equipment in a given cutting task.	• Task not carried out or completely wrong.	• Less than half of the cutting tools are selected correctly. • Cutting tools are not used correctly and safely or used with a lot of help. • Cuts are inaccurate, resulting in significant errors or waste of materials.	• More than half of the cutting tools are selected correctly. • Most of the cutting tools are used correctly and safely with some prompting. • Cuts are good but not all accurate, with some wasting of material.	• Most or all the cutting tools are selected correctly. • Most or all the cutting tools are used correctly without prompting. • Cuts are good and accurate, with minimal or no wasting of material.

LO4	**A-4** Assemble an artefact by using joining tools according to the given information.	• Task not carried out or completely wrong.	• Less than half of the joining tools are selected appropriately or adequately prepared. • Little or no understanding of joining techniques resulting in poor joints. • Assembly is inaccurate resulting in misalignment or weak connections.	• Some joining tools are selected correctly and preparation may be incomplete or insufficient. • Some techniques are applied correctly but with errors and inconsistencies. • Assembly is generally accurate but with some misalignments and inconsistencies.	• Joining tools are carefully selected and properly prepared. • Clear understanding of joining techniques, resulting in strong and durable joins. • Assembly is mostly or fully accurate resulting in a good quality joint.
LO5	**A-5** Use finishing tools and/or equipment to carry out a specific task.	• Task not carried out or completely wrong.	• Finishing tools have not been selected adequately for the task. • Most of the tools and/or equipment were not used adequately, and constant prompting was needed. • The finishing process is slow and of poor quality.	• Most of the finishing tools and/or equipment have been selected adequately for the task with some prompting. • Most of the tools and/or equipment have been used adequately but with some prompting and help. • The finishing process is of good quality but needs improvement.	• Tools and/or equipment have been selected adequately. • Tools and/or equipment have been used adequately without any help. • The finishing process is of high quality.

Assessment Distribution

	Assignment 1 & 2 Criteria	Controlled
LO1	K1	
	K2	
	C1	
LO2	K3	
	K4	
	C2	
		C3
	A1	
	A2	
LO3	K5	
	A3	
LO4		K6
		A4
LO5		K7
		K8
		A5
Marks	**62**	**38**

Unit 2: Mechanical systems

Unit Learning Outcomes

At the end of the unit, I can:

LO 1. Understand terminology and the manufacturing of threads.

LO 2. Identify and differentiate between types of structures.

LO 3. Understand and build simple machines.

LO 4. Understand and use different components involved in power transmission.

LO 5. Utilise simple machines to construct compound or complex mechanical systems.

Unit Content

Subject Focus	Inside and outside threads
LO1	**Understand terminology and the manufacturing of threads**
K1	Understand different measuring systems.

	• Metric and imperial systems of measurements.
	  ○ Know how to use the decimal system and its SI units.
	  ▪ Converting between meters to centimetres and millimetres.
	  ○ Be aware of how to interpret imperial system measurements using feet and inches.
	  ○ Being able to measure a length using the metric system.

K2	Use thread charts in preparation to cut threads.

	• Use thread charts
	  ○ Thread Pitch, Diameter, and Tolerances
	  ○ Fine and coarse threads
	
	• Real-life examples where different inside and outside threads are used:
	  ○ Examples: Bolts and nuts
	
	• Hazards and risks related to the production of threads.
	  ○ Hazard: e.g. swarf with sharp edges
	  ○ Risk: e.g.: Finger Injuries, repeated strain injury
	
	• Proper use of tool – too much force should not be used.
	  ○ Lubricating oils should be used

A1	Manufacture inside and outside threads on specific material according to specifications.

	• Using taps and dies
	  ○ Drilling the material to a specific size and use taps to cut inside threads.
	  ○ Use dies to make outside threads.

Subject Focus	Structures
LO2	**Identify and differentiate between types of structures**
K3	Distinguish different types of structures and their usage.

	• Frame
	  ○ Structural systems made of beams and columns serving as struts, ties and joints designed to handle different types of loads.
	• Mass / Solid
	  ○ A mass structure is a construction made by piling up or forming similar materials into a specific shape or design, like a brick wall or a mountain
	• Shell
	  ○ A shell structure is a thin, curved surface that supports loads through its shape rather than relying on beams or columns

C1	Explain a force acting on a structure.

	• Forces on a structure
	  ○ Compression
	  ○ Tension
	  ○ Torsion
	  ○ Shear
	  ○ Bending
	
	Note: Students should be shown real-life examples and discuss how and why these forces are happening.

Subject Focus	Simple machines
LO3	**Understand and build simple machines**
K4	Match the name of FOUR simple machines to their illustration.

	• Simple machines –
	
	  ○ Levers and linkages
	  ○ Inclined Plane
	  ○ Wheel and Axle
	  ○ Pulley
	  ○ Screw
	  ○ Wedge

C2	Relate a simple machine to a specific task.
	• **Levers and linkages**: A lever is a rigid bar that rotates around a fixed point called the fulcrum to lift or move loads. Linkages are assemblies of levers connected to transmit motion and force in a controlled manner.

	• **Inclined Plane**: A flat surface set at an angle to help lift or lower loads. • **Wheel and Axle**: A circular object (the wheel) connected to a central rod (the axle). • **Pulley**: A wheel with a groove along its edge, which holds a rope or cable to lift loads and a belt to transfer motion. • **Screw**: An inclined plane wrapped around a cylinder, used to hold objects together or lift materials. • **Wedge**: A device with one or two sloping sides that converts a force applied to its blunt end into forces perpendicular to its inclined surfaces.
A2	Manufacture a simple machine.
	Manufacture one of the following simple machines: • Levers and linkages • Wheel and axels • Pulleys
A3	Apply the use of a simple machine for a given task.
	Given task: • marble machine • automata • mechanical wind vane

Subject Focus	**Cams, shafts and gears**
LO4	**Understand and use different components involved in power transmission.**
K5	Sketch the cam shape for a particular path needed.
	• Cams – eccentric, pear, snail/drop, heart • Followers – flat, spherical, knife, roller • Phases of follower - Rise, fall, dwell, sudden fall
K6	Choose gears forming a gear compound to obtain a given ratio.

	• Gear types –
	  ○ spur, compound, rack and pinion, bevel, helical
	• Parts of a gear system –
	  ○ driver, idler, driven
	  ○ diameter, tooth height, centre, pitch.

C3	Draw a simple machine showing power transmission from given information.
	Power transmission – • motion –

	○ rotary to linear, linear to rotary ○ Rotational Motion: Motion around a central axis, such as a spinning wheel. ○ Linear Motion: Motion in a straight line, such as a piston moving up and down or a rack and pinion. ○ Reciprocating Motion: Back-and-forth linear motion, such as the movement of a saw blade. ○ Oscillating Motion: Back-and-forth rotational motion, such as the swinging of a pendulum. • speed (gear ratio) Parts forming part of a power transmission – • shafts – ○ shafts used for gears and cams, ○ crankshaft, ○ camshaft **N.B.** Drawing can be a simple line drawing showing necessary information and details.
A4	Make use of cams and shafts to transmit power.
	Note: parts can be either manufactured or ready-made (3D printed)

Subject Focus	**Compound and Complex Machines**
LO5	**Utilise simple machines to construct compound or complex mechanical systems.**
K7	Outline TWO advantages of compound or complex machines from given situation/s.
	• Compound machines – 2 simple machines incorporated • Complex machines – are made of more than 2 simple machines • Compound and complex machines can be but not limited to: ○ bicycle ○ food processor ○ eggbeater ○ can opener ○ crane ○ block and tackle ○ seesaw Advantages: • Mechanical gain • Change in direction • Increase/decrease of speed
K8	Evaluate an artefact according to given specifications
	Specifications:

	Dimensions, accuracy, Finishing quality, Skills, Overall aspect, Mechanical advantage, Simple machines forming the final product. N.B. The artefact should be one of the application criteria from A2 to A5.
A5	Construct a compound or complex machine, composed of at least TWO simple machines, from given instructions.
	Compound: Practical using 2 simple machines. Complex: Practical using more than 2 simple machines. *Note: Components can be either manufactured or ready-made.*

Knowledge criteria – 4 marks max				
		0	**1-2**	**3-4**
LO1	**K-1.** Understand different measuring systems	• Question not attempted. • Did not understand different measuring systems	• Understanding between different measuring systems is limited. Superficial explanations were provided. • Struggles to distinguish between systems • Find it hard to use a measuring system effectively	• Good understanding of different measuring and marking out systems. • Identifies clearly the different measuring and marking systems. • Can use efficiently a measuring and marking out system
	K-2. Use thread charts in preparation to cut two different threads.	• Question not attempted. • Use of thread charts completely wrong	• If only 1 answer is correct, award 2 marks.	• If both answers are correct, award 4 marks.
LO2	**K-3.** Distinguish different types of structures and their usage.	• Question not attempted. • Distinguishing different types of structures and their usage is completely wrong.	• Can distinguish some types of structures but with errors. • Understands the basic usage of some structures but lacks depth.	• Accurately distinguishes various types of structures. • Proficiently understands and explains the usage of different structures.
LO3	**K-4.** Match the name of FOUR simple machines to their illustration.	• Question not attempted or matching is completely wrong.	• 1 mark for each correct answer	

	K-5. Sketch the cam profile for a particular path needed.	• Question not attempted. • Illustration of the cam profile for the given path is completely wrong.	• Can sketch the cam profile inaccurately or incomplete details.	• Accurately sketches the cam profile with all necessary details for the given path.
LO4	**K-6.** Choose gears forming a gear compound to obtain a given ratio.	• Question not attempted. • Cannot choose appropriate gears to form a gear compound.	• Can choose gears but with errors or incorrect ratios. • Understands basic gear ratios but makes calculation errors. • Applies gear ratios to practical problems but with some mistakes.	• Accurately chooses gears to form a compound gear that achieves the given ratio. • Proficiently understands and calculates gear ratios accurately. • Accurately applies gear ratios to practical problems, ensuring the desired outcome.
LO5	**K-7.** Outline TWO advantages of compound or complex machines from given situation/s.	• Question not attempted. • Cannot outline any advantages of compound or complex machines.	• Can outline ONE advantage but with errors or incomplete understanding. • Understands the basic advantages but lacks details.	• Accurately outlines TWO advantages of compound and complex machines from given situations. • Proficiently outlines and explains the advantages of compound and complex machines.
	K-8. Evaluate an artefact according to given specifications	• Question not attempted or completely wrong.	• Conducts a basic evaluation of the artefact, identifying only one aspect within the given specifications.	• Conducts a comprehensive evaluation of the artefact, accurately assessing its alignment with the given specifications.

Comprehension criteria – 6 marks max					
		0	**1-2**	**3-4**	**5-6**
LO2	**C-1.** Explain a force acting on a structure.	• Question not attempted. • Unable to explain a force acting on a structure.	• Can briefly explain the force with minimal detail. Answer may contain significant error or incomplete.	• Explains the force with minor errors or partial understanding. • Explains the impact of forces with minor mistakes or partial understanding.	• Explains the force correctly showing complete understanding and its impact.
LO3	**C-2** Relate a simple machine to a specific task.	• Question not attempted. • Cannot relate a simple machine to a specific task.	• Can relate a simple machine to a task but with significant errors or incomplete understanding or lacks details.	• Relates a simple machine to a task with minor errors and partial understanding as well as some details.	• Accurately relates a simple machine to a specific task with detailed understanding.
LO4	**C-3** Draw a simple machine showing power transmission from given information.	• Question not attempted. • Cannot draw the simple machine or show power transmission.	• Draws the simple machine with minimal details. • The drawing may contain significant errors or incomplete details.	• Draws the simple machine with details • The drawing may contain minor errors or lack some details.	• Draws the simple machine accurately with all the details. • Contains all required details without any errors.

Application Criteria – 10 marks max					
		0	**1-3**	**4-6**	**7-10**
LO1	**A-1** Manufacture inside and outside threads on specific material according to specifications.	• Question not attempted. • Cannot manufacture threads or manufactured completely wrong.	• Manufactures threads with significant errors.	• Manufactures threads with minor errors.	• Accurately manufactures threads according to specifications with minimal or no errors.
LO3	**A-2** Manufacture a simple machine.	• Question not attempted. • Cannot manufacture a simple machine or manufactured completely wrong.	• Manufactures a simple machine with significant errors.	• Manufactures a simple machine with minor errors.	• Accurately manufactures a simple machine with minimal or no errors.
	A-3 Apply the use of a simple machine for a given task.	• Question not attempted. • Cannot apply the use of a simple machine or applied completely wrong.	• Applies the use of a simple machine with significant errors.	• Applies the use of a simple machine with minor errors.	• Accurately applies the use of a simple machine for a given task with minimal or no errors.
LO4	**A-4** Make use of cams and shafts to transmit power.	• Question not attempted. • Cannot make use of cams and shafts or used completely wrong.	• Makes use of cams and shafts with significant errors or incomplete understanding.	• Makes use of cams and shafts with minor errors or partial understanding.	• Accurately makes use of cams and shafts to transmit power with minimal or no errors.
LO5	**A-5** Construct a compound / complex	• Question not attempted.	• Constructs a compound/complex	• Constructs a compound/complex	• Accurately constructs a

	machine, composed of at least TWO simple machines, from given instructions.	• Cannot construct a compound/complex machine or constructed completely wrong.	machine with significant errors	machine with minor error.	compound/complex machine composed of at least two simple machines from given instructions with minimal or no errors.

Assessment Distribution

	Assignment 1 Criteria	Assignment 2 Criteria	Controlled
LO1	K1		
	K2		
	A1		
LO2	K3		
	C1		
LO3		K4	
		C2	
		A2	
		A3	
LO4			K5
			K6
			C3
			A4
LO5			K7
			K8
			A5
Marks	**28**	**30**	**42**