Apprentice Clay Modeller – Job Description

(Job Code and Level: EDESSTY00)

Definition:

Styling is defined as: Development of the appearance, aesthetics and to some extent the ergonomics of motor vehicles and components. It is also involved in the creation of the product concept, the vehicle aesthetics value and will correspond to ergonomic functionality and utility features as well as incorporation of emerging vehicular gadgetry as defined by the research team.

Overall Purpose of the Role:

Learn to bring shape and form to Styling ideas and designs. Learn to create models from concepts and sketches focussing on the combination of form and function, including overall vehicle package, looks for the exterior, interior and colour and trim look and feel of the vehicle.

Duration:

Typically the duration of this apprenticeship is 36 to 48 months. The duration may be reduced for a candidate with previous relevant experience and/or someone already part qualified.

Key Responsibilities:

General and Task Management:
At successful completion of your apprenticeship you will have the knowledge, skills and attitude to undertake the following:

- Develop knowledge and skills of design feature to include: function, quality, manufacturing method, ergonomics, materials, cost, life of the product, tolerances, clearance, aesthetics, physical space, operating environment, interfaces and safety
- Interpret organisational technical drawing information to construct an armature for a design model
- Construct clay armatures in line with the construction plan using the following materials: metals (frames), wood (cladding), Styrofoam, automotive styling clay

- Prepare armatures for computer numerically controlled (CNC) machining to a defined organisational standard
- Understand clay CNC machining
- Interpret a designer sketch to develop surfaces for a required design
- Create clay surfaces using hand tools to meet design requirements incorporating : construction lines, profile shapes, hard points, slab surfaces and intersections
- Develop a CNC machined model to accommodate designers 2D sketch, new engineering data, designer specified 3D interpretation
- Finish the clay model to the specified standard with the application of: di-noc film, chrome foil, design tapes, painting and other decorations e.g. number plate or name badge
- Create a 3D design in clay that achieves in principle the 2D designer sketch
- Create a 3D model using basic rendering techniques to meet design requirements
- Utilise 3D scanning equipment to capture an early clay shape to enable evaluation
- Produce rapid prototyping models
- Interpret first and third angle drawings, imperial and metric systems of measurement, work piece reference points and system of tolerance
- Cut and prepare materials for fabrication
- Produce fabricated components using the following materials: ferrous type e.g. black mild steel, bright mild steel, wrought iron, stainless steel, and non-ferrous metals e.g. brass, copper and aluminium
- Produce mechanical engineering drawings using a CAD system
- Produce models, prototypes, artwork and finalise production specification
- Research, evaluate and acknowledge information from relevant sources to assist in response to a design challenge, including historical, current and future perspectives and trends, social, economical, environmental, sustainable, ethical and cultural issues
- Evaluate a variety of creative thinking techniques for generating and exploring design ideas
- Acknowledge and work within the legal framework that applies to creative content as part of a commitment to an ethical approach including issues relating to copy write, intellectual property rights and morals

Relationship Management

- Support technicians and engineers
- Liaise and communicate with other departments

Self Management:

Occupational Behaviours: Modern high value manufacturing organisations require their apprentices to have a set of occupational behaviours that will ensure success both in their current and future roles and in meeting the overall company objectives. These required behaviours include:

- Safety mindset: This occupation sits within an industry with a high level of safety critical activities. There has to be strict compliance and a disciplined and responsible approach to manage, mitigate and avoid risk.

- Strong work ethic: Positive attitude, motivated by engineering; dependable, ethical, responsible and reliable.
- Logical approach: Able to structure a plan and develop activities following a logical thought process, but also able to quickly “think on feet” when working through them.
- Problem solving orientation: Identifies issues quickly, enjoys solving complex problems and applies appropriate solutions. Has a strong desire to push to ensure the true root cause of any problem is found and a solution identified which prevents further recurrence.
- Quality focus: Follows rules, procedures and principles in ensuring work completed is fit for purpose and pays attention to detail / error checks throughout activities.
- Personal responsibility and resilience: Motivated to succeed accountable and persistent to complete task.
- Clear communicator: Use a variety of appropriate communication methods to give/receive information accurately, and in a timely and positive manner.
- Team player: Not only plays own part but able to work and communicate clearly and effectively within a team and interacts/ helps others when required. In doing so applies these skills in a respectful professional manner.
- Applies Lean Manufacturing Principles: Continuous improvement in driving effectiveness and efficiency.
- Adaptability: Able to adjust to different conditions, technologies, situations and environments.
- Self-Motivation: A ‘self-starter’ who always wants to give their best, sets themselves challenging targets, can make their own decisions.
- Willingness to learn: wanting to drive their continuous professional development
- Commitment: Able to commit to the beliefs, goals and standards of their own employer and to the wider industry and its professional standards.

Skills and Attributes:

During the apprenticeship you will develop a solid grasp of the core engineering skills. These skills will not only prepare the apprentice for the workplace in demonstrating that they have the required manual dexterity to do their core role, but will build and stretch their transferable competencies over time. The skills required for full competence are:

- How to comply with statutory regulations and stringent organisational safety requirements
- How to effectively use and interpret a range of engineering data sources and documentation
- Organising work efficiently and effectively resources when completing tasks
- Producing components and prototypes using a wide range of hand fitting techniques
- Understand how to prepare for debating ideas in a creative environment, identifying key themes, messages and positions to aid clarity of thought and presentation

- Be able to contribute to preparing and planning a project
- Produce components to all of the following standards as applicable to the process:
    - components to be free from false tool cuts, burrs and sharp edges
    - general dimensional tolerance +/- 0.25mm or +/- 0.010’
    - there must be one or more specific dimensional tolerances within +/- 0.1mm or +/- 0.004’
    - flatness and squareness 0.05mm per 25mm or 0.002’ per inch
    - angles within +/- 1 degree
    - screw threads to BS Medium fit
    - reamed and bored holes within H8
    - surface finish 63 µin or 1.6 µm
- Engineering project planning within the prototyping context
- Business improvement planning

Qualifications and Experience Levels:

- Individual employers will set the selection criteria for their Apprenticeships. In order to optimise success candidates will typically have 4 GCSE's at Grade C or equivalent, including Mathematics, English and a Science. Employers who recruit candidates without English or Maths at Grade C or above must ensure that the candidate achieves this standard prior to the completion of the Apprenticeship.
- Advanced mathematical and scientific methods and applications for engineers
- Properties, applications and testing of engineering materials
- Engineering drawings/Computer Aided Design (CAD) for technicians
- How to undertake and apply business-led projects
- Advanced mechanical and joining principles, applications and systems
- Advanced electrical, electronic principles, systems and sub-systems
- Measurement, monitoring, testing & diagnostics within engineered systems
- Product-related systems, sub-systems and ancillaries.

Further Information:

http://qualifications.pearson.com/en/qualifications/nvq-and-competence-based-qualifications/engineering-processing-and-manufacturing/automotive-clay-modelling-l3.html

Example roles this job description may cover:

- Trainee Sculptor