**BTEC Assignment Brief**

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| **Qualification** | Pearson BTEC Level 3 National Diploma in EngineeringPearson BTEC Level 3 National Extended Diploma in Engineering |
| **Unit number and title** | **Unit 10 :Computer Aided Design in Engineering** |
| **Learning aim(s)** (For NQF only) | **A:** Develop a three-dimensional computer-aided model of an engineered product that can be used as part of other engineering processes |
| **Assignment title** | 3D Models |
| **Assessor** |  |
| **Issue date** |  |
| **Hand in deadline**  |  |
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| **Vocational Scenario or Context** | You are a second year engineering apprentice in a small to medium manufacturing company. Your supervisor has asked you to produce a portfolio relating to a specific assembly that the company manufactures for the purpose of refining the parts if it is thought necessary. You will be given the current specification for the individual parts and the assembled system. You are expected to produce the 3D models relating to each part and to produce the assembled model having added some refinements to improve the overall system. |
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| **Task 1** | **3D Models**You have been given the details of an assembly that contains at least eight components. You are required to produce the following and make refinements where you can justify them:1. Produce a 3D model of each part. Each model must be fully dimensioned and must be defined as a specific material.
2. The 3D models must be assembled and properly aligned using the tools that are available within the modelling software.
3. You will include within the portfolio a 2D orthogonal drawing for each of the components properly drawn to BS8888 that have been started using a drawing template that the learner has created that includes a boarder and suitable title block.
4. You will include within the portfolio a 2D orthogonal assembly drawing showing all of the component properly assembled properly drawn to **BS8888** that have been started using a drawing template that the learner has created that includes a **boarder and suitable title block**.
5. At least one of the models should be **shaded**.
6. At least one of the orthogonal 2D drawings should include a **detailed view**.
7. Refinements that you make must be justified separately in a “Changes to design” document.
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| **Checklist of evidence required**  | You are expected to produce a portfolio that includes the following: 1. The 3D CAD files for each of the eight models and a 3D assembly showing all of the eight components properly orientated.
2. The 2D orthogonal drawings of each of the eight components and an assembly drawing all of which have been properly drawn to BS8888 and have been started using a drawing template that included a suitable boarder and title block. At least one of the drawings must include a detailed view.
3. A copy of the drawing template that has been produced.
4. A print out clearly showing the shaded 3D model.
5. A “Changes to design” document justifying any refinement made which includes a justification of the materials selected.
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| **Criteria covered by this task:** |
| Unit/Criteria reference | To achieve the criteria you must show that you are able to: |
| 10/A.D1  | Refine models and drawings to an international standard of an accurate and correctly orientated 3D assembled product that is fit for purpose, applying appropriate materials to all components and create a drawing template.  |
| 10/A.M1 | Produce accurate models and drawings that mainly meet an international standard of an assembled 3D product containing at least seven well orientated components and apply a material to all components.  |
| 10/A.P1 | Create models and drawings of at least five 3D components from an assembled product, and apply a material to two or more components.  |
| 10/A.P2 | Create a model and drawings of an assembled product containing at least five components with two or more components well orientated.  |
| **Sources of information to support you with this Assignment** | Tickoo, S., SolidWorks 2016: A Tutorial Approach, CADCIM, ISBM 978-1-942689-19-1, 2016.Tutorial Books, Autodesk AutoCAD 2016 and Inventor 2016, AutoDesk. ISBM 9781519466631, 2016.Toogood, R., Pro/ENGINEER Wildfire 5.5 Tutorial and Multimedia CD, Perfect Paperback, ISBMThe internet will be a good resource generally for this subject ranging from data available from suppliers to specific information available from educational organisations. Care must be exercised in respect of the suitability. **Further useful resources may be found at** <http://qualifications.pearson.com/en/support/published-resources.html#step1> |
| **Other assessment materials attached to this Assignment Brief** | *Technical drawings of parts*  |