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| **Site / Area:** |       | **Date of assessment:**  |  | **Risk Assessment #:** | **021RA** |
| **Completed by (name):** |       | **Signature:** |       |
| **In Consultation with** |       | **Signature:** |       |
| **Identify / describe activity, equipment, area or event you are assessing:**  | **3D PRINTER****(Polyactic Acid – PLA; Acrylonitrile Butadiene Styrene – ABS)** |
| **In conjunction with this risk assessment, training / education and development of a relevant SOP may be required.** |
| **Step 1:** **Identify the hazard/s:**What do you believe are the hazards?(Refer Risk Assessment Guideline (015G)) | **Step 2: Assess the risks:**What do you believe are the risks?(Refer *Risk Assessment Guideline (015G))* | **Step 3: Reducing the risk:**What do you believe can be done to reduce the risk?(Refer *Risk Assessment Guideline (015G))* |
| **What could cause harm?** | **What could go wrong?** | **Controls** |
| **Extreme Temperatures*** High temperatures
 | * Contact with hot extrusion head or finished model could cause burns
* Fire
 | * Enclosed system
* Wear oven gloves when removing parts from the heat treatment oven
* Keep paper and combustibles away from the 3D printer
* Never leave 3D printer unattended while in use (for long hour printing, check intermittently)
* Fire extinguisher available (CO2 or dry powder)
 |
| **Hazardous Chemicals*** Toxic emissions
* Fumes and particles
* Ultrafine particle (UFP)
* Volatile Organic Compounds (VOC)
 | * Exposure to uncured and partially cured 3D printer material fumes can result in health effects on the respiratory system
 | * PLA filaments preferred over ABS.
* Ventilation / extraction system installed
* Carbon filters / HEPA filters in use
* Used in well ventilated room where windows can be open & or there is good air flow
* Safety Data Sheets (SDS’s) available
 |
| **Electricity*** Frayed cords
* Faulty appliances
* Overheating equipment
* Cutting cords
* Contact with exposed wires
 | * Burns
* Fire
* Explosion
* Electrocution
* Electric shock
 | * Printer is tested & tagged
* RCD installed at main switchboard and checked regularly
* Repairs & modifications by competent person only
 |
| **Machinery & Equipment*** Mechanical hazards (stepper motors, pulleys, threaded rods, carriages and small fans)
 | * Entrapment / entanglement
* Lacerations
* Cuts
* Bruising
 | * Ensure 3D printer is covered with a protective hood / cabinet, fitted with an interlocking switch to prevent it from being open / opened whilst in operation
* Hair, loose clothing is secured
 |
| **Airborne Contaminants*** Post Printing – dust (UFP)
 | * Respiratory problems
* Foreign body in eye
 | * Avoid sanding; use scraping tools to clean up student models.
* Eye protection to be worn
* Work done in a well ventilated area.
 |
| **Other*** Tools (used for cleaning e.g. metal scraper / knife blade to clean build plate)
 | * Cuts
* Lacerations
 | * Cleaning to be carried out by a competent person.
* **Students are NOT permitted to clean the 3D printers**
 |
| **Other** | *
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| **Authorised by:** |  | **Signature:** |  | **Date:** |  |

**Review hazard/risk assessment if task or circumstances change and at intervals appropriate to the level of risk (minimum 5 years).**

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| **Step 4: Monitor & review:**(Refer to hazard sheet)**Please tick Yes or No** |
| **Were the controls effective?** | **Were there any unforeseen hazards/ incidents?** | **New controls** |
| **Yes** | **[ ]**  | **No** | **[ ]**  | **Yes** | **[ ]**  | **No** | **[ ]**  |
| **DETAILS** | **DETAILS** | **DETAILS** |
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| **Name:** |  | **Signature:** |  | **Date:** |  |