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| --- |
| **URS** |
|  |
| **User requirement specification (URS) for Penny project** |

| Req. no. | Requirements | Type |
| --- | --- | --- |
| X | The equipment must be able to | CR |
| y | The equipment has the option to | NR |
| z | The equipment is not required to | X |
| Req. no. | Requirements | Type |
| X | Amount per year | Nº py |
| y | Amount per week | Nº pw |
| z | Ratio of use | Nº % |

# Requirements

## Labware requirements

| **Req.No.** | **Requirement** | **Type** | **Amount** |
| --- | --- | --- | --- |
|  | The system must be able to handle 1.5ml penfills |  |  |
|  | The system must be able to handle 3ml penfills |  |  |
|  | The system must be able to handle 6ml glasses to pour the penfills’ liquid inside |  |  |
|  | The system must be able to handle pre-filled syringes |  |  |
|  | The system must be able to handle Eppendorf tubes |  |  |
|  | The system must be able to handle HPLC tubes |  |  |

## Equipment requirements

### Plunger Remover sub module

| **Req.No.** | **Requirement** | **Type** |
| --- | --- | --- |
|  | The system must be able to safely remove the rubber plunger |  |
|  | The system must be able to visually check if the plunger is removed before aspirate the sample |  |

### Liquid Handler sub module

| **Req.No.** | **Requirement** | **Type** |
| --- | --- | --- |
|  | The system must have single-channel pipetting tool, with single use tips. |  |
|  | The single-channel pipetting tool must be able to aspirate and dispense samples |  |

### Needle Cap remover sub module

| **Req.No.** | **Requirement** | **Type** |
| --- | --- | --- |
|  | The system must be able to safely remove the needle cap |  |
|  | The system must be able to visually check if the needle cap is removed before pressing the sample out |  |

### Piston presser sub module

| **Req.No.** | **Requirement** | **Type** |
| --- | --- | --- |
|  | The system must be able to press a defined volume of sample |  |

### De-capping sub module

| **Req.No.** | **Requirement** | **Type** |
| --- | --- | --- |
|  | The system must be able to safely remove the penfill’s cap |  |
|  | The system must ensure no sample contamination nor cross contamination |  |

### Data-reading sub module

| **Req.No.** | **Requirement** | **Type** |
| --- | --- | --- |
|  | The system must be able to read the barcode on the labware |  |
|  | The system must be able to store this data |  |
|  | The system must be able to dynamically handle labware based on the reading |  |