**High-Performance Liquid Chromatography (HPLC) System**

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|  | **Name of the equipment:** High-Performance Liquid Chromatography (HPLC) System**Make & Model:**Shimadzu Prominence HPLC System**I-Stem Registration ID-** 3220814 **Category of Instrument**Analytical Chemistry**Types of Analysis / Testing*** Quantitative and qualitative analysis of compounds
* High-performance liquid chromatography (HPLC) separations

**Application:** * Pharmaceutical analysis
* Environmental monitoring
* Food & beverage testing
* Biochemical research

**Description of Instrument*** Modular HPLC system for precise and reproducible separations
* Ideal for research, QC, and routine analysis in academic, industrial, and clinical labs.
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**Booking Details**

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| **Book through I-STEM:** <https://www.istem.gov.in/>**Slot Booking Link**I-STEM Slot Booking link for External User | **Booking available for**Internal and External Both**Requisition form for** [Internals](https://randc.nitc.ac.in/pdf/instruments/civil/CED-REQUISITION_FORM_Internal.pdf)[Externals](https://randc.nitc.ac.in/pdf/instruments/civil/CED-REQUISITION_FORM_Internal.pdf) |

**Contact Details**

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**Type of Sample Required for Analysis / Testing (Quantity, Pre-Preparation, State etc.)**

**Features, Working Principle and Specifications**

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| **Features of the equipment*** **Binary Pump (LC-20AD)** – High-pressure mixing with precise flow control (0.001–10.000 mL/min)
* **Degassing Unit (DGU-20A5R)** – Online degassing for stable baselines
* **Diode Array Detector (SPD-M20A)** – Wide wavelength range (190–800 nm) for multi-component analysis
* **Column Oven (CTO-10AS VP)** – Precise temperature control (5–85°C) for improved separation
* **LabSolutions Software** – User-friendly interface for method setup, data acquisition, and analysis
 | **Unique features/Measurement capabilities, if any*** **High sensitivity detection** (low noise levels for trace analysis)
* **Wavelength programmability** for optimal peak resolution
* **Auto-validation and compliance-ready** (21 CFR Part 11 optional) Mass Range (MS): 1.2 – 1100 amu
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| **Instrument Technical Description and Major Specifications***(This Specifications Limited to Major 5)** **Flow Rate Range:** 0.001–10.000 mL/min
* **Pressure Range:** 0–40 MPa (400 bar)
* **Wavelength Range (DAD):** 190–800 nm
* **Temperature Range (Column Oven):** 5–85°C (±0.1°C accuracy)
* **Injection Volume:** 0.1–100 µL (manual/injection loop)
 | **Measurement/Sample specifications:** * **Sample State:** Liquid (filtered, 0.2–0.45 µm recommended)
* **Solvent Compatibility:** Water, organic solvents (ACN, MeOH, etc.)
* **Sample Volume Required:** Typically, 10–100 µL (depends on method)
* **Maximum Sample Concentration:** ≤10 mg/mL (to avoid column overloading)
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* Sample State:
	+ Liquid (must be fully dissolved, no particulates)
	+ Filtered (0.2–0.45 µm syringe filter recommended)
* Quantity:
	+ Minimum volume: 0.5 mL (for multiple injections)
	+ Ideal volume: 1–2 mL (for method development/repeat analysis)
* Pre-Preparation Requirements:
	+ Solvent compatibility: Must be soluble in HPLC-grade solvents (e.g., water, acetonitrile, methanol)
	+ Concentration range: ≤10 mg/mL (to prevent column overloading)
	+ Stability: Chemically stable under analytical conditions (specify if light-/heat-sensitive)
* Type of Samples Analyzed:
	+ Small organic molecules, pharmaceuticals, peptides, natural products, environmental pollutants

**Guidelines for Sample Submission – User Instructions**

* Submission Protocol:
	+ Clearly label samples with:
		- Sample name/ID
		- Solvent used
		- Expected concentration (if known)
* Documentation: Provide a datasheet specifying:
	+ Target analyte(s)
	+ Preferred detection wavelength (if applicable)
	+ Special requirements (e.g., gradient elution, column type)
* User Instructions:
	+ For manual injection: Deliver samples in HPLC vials with crimp/septum caps.
	+ Hazardous samples: Notify staff in advance (e.g., toxic/corrosive compounds).
* Prohibited:
	+ Particulate-containing samples (unfiltered)
	+ Highly viscous samples (may clog system)
	+ Non-volatile buffers (e.g., phosphates) without prior approval
* Turnaround Time:
	+ Routine analysis: 1–2 days (standard methods)
	+ Method development/validation: 3–5 days (requires consultation)
* Maximum Samples per Batch: 1 sample per run

**User Charges Rs. (GST Extra)**

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| **Internal** | **External Academic Institutes** | **National R&D Lab** | **Industry** |
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