**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. |

**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 |
| **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) |

* 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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