

# LASER SOP TEMPLATE

Laser Class		Laser Type	
Laser Manufacturer		Laser Model	
Laser Serial / Id #			
Location of laser			
Emergency Contact			

This Standard Operating Procedure (SOP) was developed as a standard for good safety practices while utilizing the laser or laser system. This SOP shall address specific safety considerations during beam alignment, normal operation, servicing and any non-beam hazards that might exist. This SOP does not take the place of laser safety training.

## Beam Alignment

- To ensure the lab is secure and to avoid distractions mark the door with the following sign: "NOTICE – Laser Alignment in Progress – DO NOT ENTER – EYE PROTECTION REQUIRED."
- Prepare and locate all equipment that is needed to perform the alignment. Please find below, a list of the equipment required during alignment and how it will be used.

EQUIPMENT	USE

Is the beam visible or invisible?	
Is special equipment needed to view the beam?	
Is the beam pulsed or continuous?	
If the beam is pulsed, can a single pulse be used to limit exposure hazard during alignments?	

*Please Note:* Intrabeam viewing is prohibited on campus and a remote viewing camera may be needed to align the beam. Use a low power alignment laser or the lowest beam power with appropriate laser protective eyewear.

List beam power or the type or low power alignment laser that will be used.	
List personal protective equipment (PPE) to be used during alignment. (Locate and inspect all PPE prior to use including lab coat, gloves, face shield, laser safety eyewear, etc.)	

- Advise someone of your location and check in with this individual on a regular basis.
- Ensure the optical table remains clear of obstructions during alignments.
- Always close beam shutter when adjusting optics or entering the beam path. Make sure all optics are secured to the table prior to opening the shutter.

List steps to be taken during the alignment of the laser

- Ensure all beam blocks, enclosures, and beam barriers are in place when the alignment is complete.
- When alignment is complete remove the “NOTICE – Laser Alignment in Progress – DO NOT ENTER – EYE PROTECTION REQUIRED” sign from the room entrance and ensure the appropriate ANSI laser warning sign is in place and correct.

### Normal Operation of the Laser

- Ensure door remains closed and locked from the outside when laser is in use.

Note location of the following materials

MATERIAL NAME	LOCATION OF MATERIAL
Laser Safety Guidelines	
Copy of this SOP	
Documentation of Laser Safety Training	
Manual for the Laser Listed Above	

Ensure the appropriate safety equipment is available. Specify the safety equipment required (including any Personal Protective Equipment)).

List the start-up procedure for the laser that will be used (including inserting the key, turning the power supply on, closing the shutter, activating the laser, etc. as specific to the laboratory). This information will likely be available in your laser’s operating manual.

Describe the experimental procedure (specific to the laboratory)

Describe the laboratory specific emergency procedures including procedures for evacuation, location of safety equipment (eyewash, safety shower, fire extinguisher, etc.) and the location of the emergency shut-off switch.

List the shutdown procedure for the laser that will be used (Including closing the shutter, turning the power supply off and turning the water off). This information will likely be available in your laser's operating manual.

Remove laser activation key and store appropriately. Find below the storage location of the laser activation key.

Ensure "Laser In Use" sign is no longer activated when laser key has been removed and laser is off. Secure door to laser facility prior to leaving the area.

### Non-Beam Hazards

Users must read the Material Safety Data Sheets for the lasing media (including laser dyes) and personal protective equipment required for handling lasing media or dyes (such as lab coat, safety glasses, and gloves) must be available.

List the lasing media and the required PPE

Dyes must be prepared in a properly functioning fume hood and transported in sealed leak proof containers. Indicate the location of the fumehood.

Dye pumps should sit in a secondary containment tray and concentrated halogen gases (greater than 5%) should be stored in a properly functioning gas cabinet. Indicate the locations of the dye pumps or concentrated halogen gases.

All compressed gases shall be secured and staff should be trained in the safe management of cylinders and the hazards associated with specific compressed gases. List the compressed gases found in the laboratory.	
Flammable solvents are often used with laser dyes and to clean optical components. Ensure these solvents are kept out of the path of the laser beam and stored in a flammable storage cabinet. Indicate the location of the cabinet.	

## Servicing

Only properly trained personnel shall work on high voltage systems (Electricians should be trained in CPR as a safety precaution). The “buddy” system should always be used when working on electrical systems.

Note the placement of fire extinguishers and ensure the laboratory staff knows how to use extinguishers and the fire alarm system.

Safety interlocks shall never be disabled without the consent of the Manager of Laboratory and Academic Program Safety.

Any servicing of lasers or laser equipment shall be performed according to the manufacturer’s instructions or by the vendor service staff. Prior to any servicing of the laser, the appropriate ANSI warning sign stating “NOTICE – Laser Repair In Progress – DO NOT ENTER – Eye Protection Required” must be posted. All enclosures, interlocks and safety devices must be replaced and verified operational prior to returning the laser to service. The ANSI warning sign stating “NOTICE – Laser Repair In Progress – DO NOT ENTER – Eye Protection Required” must be removed upon returning the laser to service.