

# MINES | Shared Instrumentation Facility

**MINES SHARED INSTRUMENTATION FACILITY-** The purpose of the SIF is to provide and support state-of-the-art research equipment capabilities for Colorado School of Mines and the extended Mines community. SIF seeks to maintain internal user fees at or below average fees at comparable institutions while maximizing instrument use.

- I. **SIF Organization-** The SIF operates under the guidance of the Vice-President for Research and Technology Transfer and the SIF Director. SIF equipment is located in dedicated laboratories or in faculty labs.
  - A. **SIF Director-** The SIF Director advocates for the facility and works with the SIF Board and SIF Research Scientists to develop facility policies and maintain budgetary oversight. The director ensures adequate staffing, training, and support for the staff. This position also seeks out and assesses new capabilities and opportunities for obtaining them, meets with internal and external users of the facility, particularly regarding big projects / opportunities, and meets with equipment vendors to explore new frontiers such as technique or instrument development. The director also works with other Mines offices and departments regarding policies that affect the SIF.
  - B. **SIF Board-**The Board is a group of at least 9 faculty members who serve three-year terms. Faculty members are appointed each fall semester by the VPRTT. The SIF Board is an official committee and does count for professional service for faculty members. The Board must approve by a 2/3 majority of attendees any instrument addition to SIF, major changes to policies, and any instrument disposition. A quorum of six faculty members is required to hold an official meeting. Summary meeting minutes with action items noted will be kept by the SIF Administrator, edited by the chair, and distributed to the Board before the next meeting for approval by the Board.
  - C. **Faculty Instrument Advisor-** Each instrument or instrument group will have a faculty instrument advisor (FIA) that is intimately familiar with the instrument. The FIA along with the SIF Research Scientist will establish guidelines on use of the equipment, maintenance, training users in instrument operation, oversight of super-users, and service work performed on the instrument.
  - D. **SIF Staff Research Scientists-** SIF Research Scientists (RS) are professional staff employees (including research professors, research associates, research support staff, and research professionals) who are responsible for the operation, training, maintenance, service work, and associated duties for all SIF equipment. Each instrument or instrument group will have a SIF RS assigned to it and clusters of related instruments may have an RS designated as manager over that cluster of instruments and associated staff. The instrument RS will either repair or call in service for equipment maintenance. They will help ensure that user activity and service work are properly tracked. They will be responsible for overall safety issues for the SIF facilities and specific equipment in the facilities. They will ensure users are trained adequately in instrument operations and will oversee super-user check-out procedures. SIF RSs and the FIA will keep all users up-to-date on the latest in instrument capabilities and operations. RSs may participate in faculty research. The FIA and RS for an instrument may be the same person.

- E. **SIF Administrator-** The SIF Administrator will handle administrative tasks for the SIF such as invoicing, procurement, interfacing with the Mines contracts group, coordinating meetings, workshops and user groups, advertising/marketing, and maintaining the website.
  - F. **Users-** Users of SIF, prior to the use of the instruments, will submit appropriate users' applications, forms, or service requests through the designated procedure. They are responsible for providing funding information for billing and adhering to all SIF training, safety, and ethical policies as they pertain to users. Users are authorized to operate equipment with the approval of the instrument RS. Users should acknowledge the SIF support on publications and presentations, in the form of "...we acknowledge Mines Shared Instrumentation Facility at Colorado School of Mines for use of..."
    - 1. **Internal users-** Internal users are any faculty, fellow, visiting scientist, graduate student, postdoc, or student associated directly with Mines who will be billed for user fees from funds available through Mines using a six-digit Banner index.
    - 2. **External users-** External users include any outside corporate entity or non-profit research or educational entity not directly associated with Mines. External users will submit the appropriate forms and insurance for approval through Mines contracting office and the SIF Administrator.
    - 3. **Instrument User Groups-** These groups will be managed by the SIF RSs and can include both internal and external users of an instrument. They will communicate as needed, especially as new equipment is added, to review user policies and training procedures for individual instrumentation, as well as to offer suggestions for user policies.
    - 4. **Super-Users-** In order to assist in user training and smooth machine operation, a set of students/post-docs/other faculty who are experts in specific instruments may be designated Super-Users. The FIA and the SIF RSs will be responsible for assigning Super-User status to individuals. This group will have the authorization to train new users of the instrument and perform other duties under the direction of the SIF RSs.
- II. **SIF Instrumentation-** SIF oversees a portfolio of diverse equipment originally purchased through a variety of single investigator, collaborative and institutional grants. This section details the mechanisms by which instruments are added to SIF's list.
- A. **Candidate Instruments for SIF Stewardship**
    - 1. **Initial List-** In July 2021, the facility went live with a variety of instruments from across campus vetted by the implementation team and originally purchased through individual, collaborative and institutional funds. The following outlines the process for additional equipment to be included in the facility.
      - a. **Equipment Nominations-** Mines faculty members, department heads, deans and the VPRTT can recommend existing instruments for SIF stewardship. The SIF may also actively pursue an instrument for inclusion in the portfolio. In either case, each nomination should provide, for each instrument, information concerning its age, location, user history, financial history and status, maintenance costs and prior support. In addition, the nomination should recommend a staff member or faculty to be the Faculty Instrument Advisor (FIA) of the instrument and an RS to manage it.

- b. **Donations from External Organizations-** SIF may accept donations of equipment from external organizations, companies or individuals. The equipment must be approved by the SIF Board as described below. If it is used equipment, information should be provided about its age, location, user history, and condition. The donation will be processed as a gift through the Mines Foundation. It will be entered into the Mines accounting and property inventory systems.
- c. **Acquisition by grants and contracts-** The SIF board members will encourage faculty members to pursue grants and contracts for purchase of new shared equipment. Examples include: NSF, DOD, DURIP grants, consortium or foundation funding and individual or corporate donors as part of Mines' development programs.
- d. **Partnerships with Companies-** Opportunities for partnering with companies for reduced cost acquisition or temporary use of instrumentation may arise. These should be pursued in the cases where there is a clear benefit to Mines. However, these instruments will still need to follow the same SIF structural requirements as other instruments regarding management, user fees, etc. That is, the company cannot stipulate conditions (e.g., no user fees) that go against SIF policies or undercut existing SIF instrumentation.
- e. To be prepared for acquisition opportunities that may occur, the SIF will maintain a list of desired shared equipment, including replacements for aging capabilities, which will be solicited from all faculty and will be prioritized by the SIF Board. The list will be updated regularly.

**B. Guidelines for accepting instrumentation into SIF**

1. **The Decision-Making Process-** The SIF board will consider each request at two consecutive meetings. In order to be added to the SIF, an instrument must receive a 2/3 majority vote of attendees at each meeting.

**2. Guidelines for Accepting Instrumentation**

- The instrument should currently be a shared resource or easily transitioned. Broadly, the guidelines for this include all of the following:
  - a) An instrument whose continued operation requires the support of user fees beyond more than two faculty members and for which no faculty member contributes more than 50% of the revenue.
  - b) An instrument that is used by faculty in more than one department.
    - c) An instrument whose original value exceeds \$50k, though the shared equipment may include less expensive instrumentation that is necessary for the operation of or supports the use of other shared instrumentation, such as sample preparation instruments.
- Adequate physical access to the instrument.
- Assessment of finances for feasibility of sustainability.
- Ongoing plan for management and maintenance of the instrument. Determination of the oversight of the instrument and user group.

### 3. User Fees and Scheduling for Capital Equipment Contributors

- To comply with federal funding regulations, the SIF cannot provide any special consideration on user fees for any instrumentation. Users will pay the university sanctioned rate. SIF can consider special scheduling preferences in circumstances such as when individual faculty funds are used to purchase an instrument, when faculty manage the instrument, or when faculty house shared equipment in their lab space

#### C. Demoting Instruments Out of SIF.

1. **The Decision-Making Process-** The SIF board will make decisions regarding instruments considered for removal.

#### 2. Guidelines for Removing Instrumentation From the SIF

When one or more of the following criteria are met, an instrument may be considered for removal from SIF:

- The instrumentation no longer meets the shared instrumentation guidelines (See section II B 2.)
- There has been excessive investment of SIF money in the instrument's maintenance, with little proportionate revenue (See Section IV F.)
- A PI is committed to managing the instrument apart from the Mines Shared facilities.

If an instrument is to be sold or decommissioned it will follow the Mines procedures governing instrument disposition.

III. **SIF Stewardship Responsibilities-** SIF is responsible for the general oversight of shared equipment, including user fees and user policies. Much of this work is done continuously by the FIA and RS as described below, with Board input when necessary:

A. **Setting Internal User Fees-** The RS and FIA will work with the Office of Research Administration (ORA) in regularly reviewing instrument fees. All internal instrument fees will be tracked in a single Org, however, indices will be maintained for individual instruments or groups of related instruments, which may be used by the RS and FIA for usual operational expenses. This accounting structure will assist in tracking each instrument's contribution to guide in resource allocation and on-going operational planning.

B. **Setting External User Fees-** External users will be allowed to use instruments on an available time basis. External academic users will pay agreed-upon published rates, which are often the internal rates plus the current negotiated overhead fees maintained by ORA. This ensures that these users adequately contribute to the overhead (utilities and other operational costs) that is automatically charged to internal users. External commercial users will pay user fees as determined by a survey of external, comparable facility rates. These rates are set such that the SIF does not charge less than what commercial facilities charge for comparable instrumentation. In addition, any user needing the time of a SIF RS will pay an additional time charge for that scientist. External instrument fees will be tracked separately from the internal fees because these have additional flexibility in how they may be used. However, external usage is not the top priority of SIF and should be managed in a way that does not hinder internal access.

- C. **Collecting User Fees-** The SIF administrator in conjunction with the SIF staff will coordinate the monthly assessment of user fees. For internal user fees, the SIF administrator will post charges monthly and will address any related issues with Mines' Controller's office. For external fees, invoices will be generated monthly and communicated to the designated accounts payable contacts.
  - D. **Setting User Policies-** The RS and FIA will regularly review user policies, training regulations, instrument manuals, and safety procedures for their machines. The SIF FIA and RS have authority to suspend any users for egregious violations of ethical standards. Such ethical violations include, but are not limited to, intentional failure to record usage of equipment, falsifying log records, and lying about or failing to immediately report damage to SIF equipment to the FIA or RS in charge of the equipment. Reinstatement of an individual's ability to use an instrument will be determined by the RS and FIA. Appeals may be brought to the SIF Board.
  - E. **Research Projects Involving the SIF Research Scientists-** In cases where the SIF RSs are faculty members on a research project or are involved with faculty members on a joint research project, usage time for the instrument will be charged. However, an additional charge for the SIF RS will not be assessed.
  - F. **Official University Courses-** RSs are encouraged to participate in official courses offered by the university. This can include teaching a class, co-teaching a course with a faculty member, and/or participating in a laboratory course. Usage fees for SIF equipment used in such courses should be arranged in advance to prevent misunderstandings.
  - G. **Ensuring Functional Instrumentation-** The operation of each instrument is the responsibility of the FIA, the RS, and ultimately the SIF Board. If an instrument is broken, the SIF will take immediate action to see that it is repaired on a timely basis.
  - H. **Reviewing Shared Instrument Grants-** Large instrumentation grants have an immense future impact on campus. Grant proposal forms should incorporate a method for indicating the acquisition of potential SIF equipment. Grants that propose acquiring an instrument that will be a part of SIF and/or receive RTT cost-share should be reviewed by the SIF Board prior to submission to assist in devising a tenable, long-term management plan.
- IV. **Resource Allocation for SIF Instruments-** The SIF Board has the responsibility to see that its instruments' operations are financially sustainable. Its financial resources include user fees, funding from grants, and institutional monies. Any request for extraordinary, one-time instrument support must be approved by the SIF board. The guidelines for such decisions are given below:
- A. **Maintenance Contracts-** The RS and FIA (in consultation with the SIF Board, if needed) will consider whether to continue maintenance contracts on individual instruments and components as they are due for renewal. Considerations may include the cost/benefit return of the maintenance contract, the possible effect of prolonged instrument downtime, and the exploration of more cost-effective alternatives. In the event that an instrument's user fees are insufficient to support the cost of the maintenance contract, a variety of options may be considered, including:
    - Purchasing the maintenance contract using additional SIF funds.
    - Allowing the contract to lapse and going to a Time & Materials arrangement for repairs.
    - Allowing the RS to provide maintenance if appropriate for that instrument.
    - Removing the instrument from SIF.
    - Selling the instrument.

**B. Replacement of Key Components/Parts-** When an instrument not on a maintenance contract requires unplanned emergency repairs or maintenance which is outside the scope of the instrument's budget, the SIF Board will consider whether to provide support. In extreme circumstances, approval may be granted by the VPRTT, with ratification by the Board at the next meeting.

**C. Instrument Assessment-** Assessment of each instrument's value to research, financial status, and operations is crucial to the Board's decision making when allocating resources from the SIF. Instruments which have repeatedly significantly underperformed usage and revenue estimates will be considered carefully for removal. Factors considered may include:

- Prior financial history: revenue versus instrument costs.
- Usage of machine: % usage capacity.
- User base- both size and diversity.
- User satisfaction.
- Faculty assessments of machine's importance to their research.
- Support of Faculty Instrument Advisor.
- Future plan for building user base.
- Ability of someone outside of SIF to manage instrument.

**D. Annual Review and Assessment-** Will be completed by the Board each year after the end of the fiscal year. Reviews of equipment labs/clusters, will include percentage of equipment uptime, total hours for training students, research use and external use, the safety record of the lab, the number of new users, etc. Maintenance, repair or replacement challenges/successes will be reported by equipment management. Development projects and acquisitions will be reviewed as necessary. Financials will be assessed, and a plan for the next year voted on.

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