



Central Analytical Facility
PCAF AT LAURENTIAN UNIVERSITY

Centre d'analyse
CAP À L'UNIVERSITÉ LAURENTIENNE

Perdue
Central Analytical Facility
Policies
(2018/2019)



LaurentianUniversity
Université **Laurentienne**

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1 PCAF Overview

1.1 Acronyms

CFI - Canadian Foundation for Innovation

CSL – Chemical Safety Level

HQP – Highly Qualified Personnel

IOF - Instrument Operation Funds

OMR – Operation, Maintenance, Repair

PCAF - Perdue Central Analytical Facility

PI - Principle Investigator

PPE – Personal Protective Equipment

SED – Support, Enhance, Develop

SOP – Standard Operating Procedure

1.2 Purpose

The **Mission** of the Perdue Central Analytical Facility is to enable and facilitate collaborative, multi-investigator, multi-disciplinary, and regional research involving major research instrumentation.

The **Vision** of the Perdue Central Analytical Facility at Laurentian University is that it will play a significant role in facilitating new discoveries and in developing dynamic infrastructure and expertise. It will provide first-class facilities and training for next-generation students and it will provide a foundation for enhanced partnerships with government, academia and industry partners to support collaboration in research.

1.3 Advisory Panel

The purpose of this group is to review facility policies, instrument condition, instrument use, strategic plans, and facility budgets to provide recommendations on the operations of the facility. The facility manager will prepare annual PCAF operation reports that will facilitate discussions during annual PCAF Advisory Panel group meetings. Regular communication with the facility manager and panel members is expected throughout the year via emails, phone and in-person communications.

For the 2018/2019 inaugural year, members from the PCAF Technical Working Group, faculty that attended the faculty consultation forums, PCAF Manager, PCAF Technologist, Laurentian University Strategic Research Director, Ontario Geological Laboratories Manager, a MOECC Lab Services Branch

scientist, and representatives from commercial and industrial laboratories will be invited to participate as panel members. Panel members external to the university will be non-voting members. This group will develop the Advisory Panel terms of reference in the first year of facility operations and policy review.

2 Fee Structure

The purpose of fees charged for the PCAF services and resources is to support costs for the operation, maintenance and repair of instruments, as well as instrumentation support, enhancement and development. Hence, PCAF instrument fees are structured to accomplish this goal by using a two target approach. The first focuses on fees to support operation, maintenance and repair (OMR) and the second, focuses on fees to support, enhance and develop (SED) the facility resources. User fees are determined by adding OMR fees and SED fees, based on daily use. Where appropriate, daily fees can adjust to ½ day or hourly rates by dividing the daily rate by 2 or 8, respectively.

2.1 Operation, Maintenance and Repair (OMR) Fee

OMR values are determined using the daily consumables cost plus a percentage of the annual service contract cost. The percentage of the annual service contract cost charged for each day of use is relative to the number of days/year the instrument is used. The goal is to distribute the service contract cost evenly over the daily use. The percentage of the service contract charged for each day the instrument is used is estimated based upon the usage from the previous year, but may be adjusted by the facility manager in consultation with the Advisory Panel if usage is predicted to change significantly. Consumables may include, but are not limited to liquids or gases used to support instrument operations, quality control and quality assurance materials, and disposable items, such as columns, filters, oils/grease, pump tubes, and vials when provided by the PCAF.

2.1.1 Equipment Not Holding a Service Contract

When a service contract is not advantageous and/or is not possible, usage fees for equipment will be determined as described in section 2.1 using the service contract value with the accumulated funds held for instrument repairs.

2.2 Support, Enhancement and Development (SED) Fee

The SED funds are to support maintenance and repairs not covered under service contracts, strategic instrument enhancement, such as hardware and software upgrades and growth of facility resources. The instrument SED charge is determined using 20% of the instrument value divided by instrument life expectancy in years as identified by the manufacturer and amortizing this annual value over estimated daily use, similar to OMR fee portions (section 2.1).

A percentage of the instrument value is used to scale the SED fee because this is likely proportional to the costs specific to each instrument. For example, an enhancement of a \$500,000 instrument likely costs more than for a \$50,000 instrument. The value of 20% is used to support revenue generation for modest instrument enhancement and development, but expected to be low enough to not inhibit faculty users.

Opportunities to use the funds can be requested by faculty through an application submitted to the Advisory Panel. However, additions and alterations to instruments must first be approved by the instrument provider and must not inhibit their research. An instrument provider is a Laurentian University faculty member that transfers one or more analytical instruments to the PCAF, where in grant applications they are identified as the principle investigator for the instrument(s) transferred.

2.3 Estimated Daily Usage for First Year Operations (2018/2019)

During the first year of operation (2018/2019) the estimated number of days/year the instrument will be used is determined as 80% of 50 weeks/year times 5 days/week, representing the expected annual usage to amortise maintenance and repair costs (200 d/yr). Hence, 2018 daily OMR costs are 0.5% of the instrument service contract cost plus the cost of consumables. Similarly, for section 2.2, 2018 daily SED costs are 0.5% of 20% of the new instrument cost divided by a 10 years instrument life expectancy. For subsequent years, daily usage will be determined as described in section 2.1.

2.4 User Types

There are three user types defined by the facility, each with a different fee rate. These include:

- 1) Laurentian University faculty,
- 2) external academics, not-for-profit organizations and government agencies, and
- 3) commercial/industrial clients.

2.4.1 Laurentian University Faculty

Laurentian University faculty fees are determined as described in section 2 (OMR fees + SED fees).

2.4.2 External Academics, Not-For-Profit and Government

Fees for these groups that are external to the university are determined as the faculty rate (section 2.4.1) x 2 or at the discretion of the facility manager in consultation with the Advisory Panel.

2.4.3 Commercial/Industrial

Fees for commercial clients are determined as the faculty rate (section 2.4.1) x 3 or at the discretion of the facility manager in consultation with the Advisory Panel. For example, using fair market value determined as the average from 3 commercial laboratory service rates may be more appropriate in some cases.

2.5 Service Fees

Where clients require assistance from a PCAF technologist, a fee in addition to those described in sections 2.1, 2.2 and 2.3 will be charged. Fees generated through services are used to support the PCAF OMR and SED costs.

2.5.1 Full Service Fees

Where clients require a full service option, which is described as instrument operation and data processing conducted by PCAF staff, a fee in addition to those described in sections 2.1 and 2.2 of

\$30/hr for PCAF staff “hands-on” time during instrument operation and data processing will be charged. Fees generated through services are used to support the PCAF OMR and SED costs.

2.5.2 Training Fee

Instrument operation and data processing training can be provided by the PCAF staff at a fee of \$30/hr for up to 3 people. An additional fee of \$5/person/hr will be charged for more than three people.

2.5.3 Sample Fees

An individual sample rate can only be determined for full service fees (section 2.5.1). The sample rate is determined as the daily cost (section 2.5.1) divided by 80% of the maximum number of samples analysed per day. The PCAF may reserve the right to conduct the individual samples analysis after the sample load exceeds 70% of maximum capacity or provide the service at a “Rush Sample” rate.

2.5.4 Rush Samples

At the discretion of the PCAF Manager, requested rush Full Service analysis may be accommodated at 200% to 300% fee rates.

2.6 Discounts and Credits

2.6.1 Off-Hours

Instruments may be available to Laurentian University faculty and students at a discounted price from that described in sections 2.1 and 2.2 during off-hours. Off-hours are described as periods outside of the standard 8am to 6pm and Monday to Friday work week. Off-hour rates are determined using only the OMR fees. Note select instruments, such as those with auto-samplers, may maintain a standard operating period and will be excluded from off-hour discounts during weekday evenings. These instruments will be identified in the online booking system.

2.6.2 Canadian Foundation for Innovation (CFI) Instrument Operating Fund (IOF) Credit

IOF transferred to the PCAF are available to the PI as credit to OMR fees directed to the associated IOF supported instrument. A maximum of 10% of these funds can be used for consumables. At the discretion of the PI, all or a portion of the PCAF IOF credit can be transferred to other Laurentian University faculty collaborators, provided the funds are applied to the OMR of the appropriate CFI funded instrument.

2.6.3 Instrument Providers

Faculty that provide an instrument to the facility will benefit from a SED fee exemption (section 2.2) for the greater of two years or the grant period associated with the instrument. These will be clearly articulated in a written agreement with the PI.

For new instruments with a multi-year service contract, all Laurentian University faculty only pay the consumables portion of the OMR fee up to the beginning of the final year of the original service contract. After which, all users will pay full OMR fees.

2.6.4 Finders Fee

Laurentian University faculty who have secured industrial clients paying the commercial rate (section 2.3.3) will benefit from a PCAF credit equal to 1/6 the industrial client's fee.

2.7 Exclusions

Exclusions may be made at the discretion of the facility manager in consultation with the User Group Advisory Panel.

2.7.1 NMR 2018 Exclusion

The NMR user fees will be calculated using only OMR fees and a service contract value of \$20,000.

2.8 Examples of User Fees

The following tables provide examples of expected user fees based on the above policies. Expenses have been estimated, thus actual fees may vary from the tables presented below.

2.8.1 ICP-MS

ICP-MS User Fees (\$)				
	Faculty/Student Daily	Faculty Full Service	External Academic Full Service	Industrial Full Service
Daily Rate (95 samples)	\$195.00	\$435.00	\$870.00	\$3000.00
Sample Rate	N/A	\$5.70	\$11.20	\$25.00
Discounted Price Off-Hours (2.6.1)	\$175.00	N/A	N/A	N/A
Discounted Price Instrument Provider (Grant Period) (2.6.3)	\$175.00	\$415.00	N/A	N/A
Discounted Price New Instruments with more than 1 year service contract (2.6.3)	\$95.00	\$335.00	N/A	N/A
Rush Service	N/A	\$870.00	\$1740.00	\$6000.00
Training (approx. 12 hrs)	\$360.00	N/A	N/A	N/A

Assumptions:

- 1) ICP-MS value \$200,000
- 2) Service contract value \$20,000/yr
- 3) Consumable costs are \$75/day
- 4) Annual usage is 200 days
- 5) Off-Hour and Instrument Provider discounts cannot be combined
- 6) Full Service technologist time for instrument operation and data reporting is 8 hrs

2.8.2 LC-MS

LC-MS (QToF) User Fees (\$)

	Faculty/Student Daily	Faculty Full Service	External Academic Full Service	Industrial Full Service
Daily Rate (50 samples)	\$324.50	\$684.50	\$1369.00	\$3750.00
Sample Rate	N/A	\$17.10	\$34.2	\$75.00
Discounted Price Off-Hours (2.6.1)	\$285.00	N/A	N/A	N/A
Discounted Price Instrument Provider (Grant Period) (2.6.3)	\$285.00	\$645.00	N/A	N/A
Discounted Price New Instruments with more than 1 year service contract (2.6.3)	\$114.5	\$474.50	N/A	N/A
Rush Service	N/A	\$1369.00	\$2718.00	\$7500.00
Training (approx. 16 hrs)	\$480.00	N/A	N/A	N/A

Assumptions:

- 1) LC-MS value \$395, 000
- 2) Service contract value \$42,000/yr
- 3) Consumable costs are \$75/day
- 4) Annual usage is 200 days
- 5) Off-Hour and Instrument Provider discounts cannot be combined
- 6) Full Service technologist time for instrument operation and data reporting is 12 hrs

2.8.3 NMR

NMR User Fees (\$)				
	Faculty/Student Daily	Faculty Full Service	External Academic Full Service	Industrial Full Service
Daily Rate	\$175.00	\$415.00	\$830.00	TBD
Hourly Rate	\$21.90	\$51.90	\$103.75	TBD
Discounted Price Off-Hours	N/A	N/A	N/A	N/A
Discounted Price Instrument Provider (Grant Period)	N/A	N/A	N/A	N/A
Discounted Price New Instruments with more than 1 year service contract (2.6.3)	N/A	N/A	N/A	N/A
Rush Service	N/A	\$830.00	\$1660.00	TBD
Training (approx. 12 hrs)	\$360.00	N/A	N/A	N/A

Assumptions:

- 1) Service contract value \$20,000/yr

- 2) Consumables are \$75/day
- 3) Annual usage is 200 days
- 4) Full Service technologist time for 1 day instrument operation and data reporting is 8hrs

3 Facility Access

The purpose of the facility access policy is to ensure facility users have safe, secure, competent, comfortable, and flexible facility use. These are supported through facility security, training, an online booking system, accountability, and defined priority users. Failure to follow any PCAF policy may result in restricted or denied access.

3.1 Facility Security

Access to the facility and within facility sections will be controlled using programmable access cards. The access cards will be programmed for specific users, thus recording user activity and permitting access only to required areas in the facility and during approved times. Key card access will only be granted after the mandatory training (section 3.2) has been completed.

3.1.1 Sign-in

All users are required to sign in and out of the facility using the user-logbook located near the main entrance (corridor 206).

3.1.2 Off-hours

If a user is working alone in the facility during off-hours (after 6pm and before 8am Mon-Fri and all times Saturday, Sunday and university holidays), the user must notify security using the facility phone when they enter the facility, provide safety check phone calls to security every 90 minutes and the user must inform security when they exit the facility. Failure to provide scheduled safety check phone calls will initiate a response where security first calls the facility and failing a response security will then conduct a facility wide inspection.

For emergency assistance, emergency phones with direct lines to security are located in each laboratory section. Once activated, Laurentian University security are alerted to the emergency and personnel will respond to investigate and provide assistance as needed.

3.2 Training

Prior to obtaining access to the PCAF, the user must complete facility orientation training. Prior to operating facility instruments users must complete training for each instrument to be used.

3.2.1 Facility Orientation

To complete the facility orientation, users must have completed WHMIS training and Laurentian University Laboratory Safety Training (contact Gail Cowper-Benoit) within the last year. Certificates

confirming the new user successfully completed the required training modules must be submitted to the PCAF Manager. Copies will be held on file in the facility.

All users require PCAF orientation training prior to obtaining an access card and for approved independent use of the facility. The purpose of the orientation is to provide a safe and respectful work environment by identifying space and equipment function in the facility, potential hazards, protective and safety resources, and laboratory rules and codes of conduct. Orientation can only be provided by PCAF staff and Form 100 Orientation must be signed by the trainer and trainee. Copies will be held on file in the facility.

3.2.2 Instrument Training

Facility users must get training prior to operating an instrument. Training must follow the procedures described in SOP 100 Training. Trainers must get approval by the PCAF Manager and may include PCAF staff and trained Laurentian University faculty, HQP, and technicians. All training records (Form 102 Training) must get signatures from the trainee and trainer. Copies will be held on file in the facility.

3.2.3 Untrained Guests

Non-trained guests must be approved by the PCAF Manager and require accompaniment by a trained facility user at all times.

3.3 Booking

Instrument and service booking is available online using the QReserve portal. A link to this portal is available on the PCAF webpage (under development). A valid budget number or purchase order number is required to reserve PCAF services or resources. Users that do not have signing authority on budgets, but it is desirable for them to self-book must be part of a user group with a lead that has rights for budget approvals (budget principal). The user group lead must provide, in writing, user group members approved for booking and individual instrument usage limits (Form 101 User Access).

3.3.1 Cancellations

Insufficient notice for the cancellation of a reservation may result in a partial or full charge only for the OMR fees portion (section 2.1), but not including consumables costs. Refer to Table 3.1 for a description of the cancellation notice and related charges.

Table 3.1 Instrument Reservation Cancellation Charges

Cancellation Notice	% of OMR Fee Charged
Greater than 2 weeks	0%
7 to 14 days	50%
4 to 6 days	75%
Less than 4 days	100%

If another user books the same instrument during this cancellation period, no cancellation fees will be applied for the new booking period.

3.3.2 Unplanned Offline Equipment

If an instrument unexpectedly goes offline, no instrument scheduling change will occur and a new session will have to be booked by the user. However, communication with the PCAF manager to accommodate time sensitive samples or visiting researchers is encouraged.

3.4 Accountability

The principal for purchase order or budget numbers used to reserve PCAF resources (see section 3.3 Booking) is accountable for all users working under that purchase order or budget number (user group) as a supervisor. Hence, this principal (user group lead) must define in writing (Form 101 User Access) to the PCAF Manager approved user group members, instruments for use by each user, usage limits, and user access or time restrictions. Using direction from the user group lead, access card programming will define areas and times a user is permitted in the facility. Students must notify their supervisor each time prior to working alone.

3.5 Priority Users

The PCAF was established to improve research resources for Laurentian University faculty. Hence, Laurentian University faculty are the primary users and have the highest user priority. However, access to external users will be available to enhance collaborations, partnerships and provide an opportunity for revenue generation to support facility operations. At the discretion of the facility manager, users may be granted additional access to facility resources providing it does not inhibit priority use.

For instruments that remain available for booking two or less weeks in advance, there is no priority booking, thus they can be reserved up to 100% of that time by all trained users.

3.5.1 Instrument Providers

Instrument providers can book up to 40% (approx. 8 days) of the monthly standard facility operating time (Mon-Fri, 8am-6pm) for the instrument they provided. During the period the instrument grant is active, the instrument provider can book up to the greater of 50% (approx. 10 days) of the monthly standard facility operating time or the time as described in the grant application. The instrument provider has first right of refusal for this time, where it then becomes available to other users. The instrument provider may also allocate this time to other users of their choice.

3.5.2 Laurentian University Faculty

Laurentian University faculty users can book up to 30% (approx. 6 days) of the monthly standard facility operating time based on a first come first serve basis.

3.5.3 External Users

External users can book up to 15% (approx. 3 days) of the monthly standard facility operating time based on a first come first serve basis.

3.5.4 Off Hours

For off hours, such as evenings, weekends and university holidays, instrument booking will only be available to faculty research groups and on a first come first serve basis.

4 PCAF Health and Safety

The PCAF Health and Safety policy is complimentary to and is to be used in conjunction with the Laurentian University Laboratory Safety Program document found at:

<https://intranet.laurentian.ca/upload/0/1262/9775/Laboratory%20Safety%20Program%202015.pdf>

This document discusses general laboratory health and safety principles providing the foundation for health and safety policies for the PCAF and **must be read before obtaining access** to the PCAF. The PCAF specific policies discussed below provide auxiliary rules and information to that discussed in the LU Laboratory Safety Program. PCAF Standard Operation Procedures (SOPs) include a Health and Safety section specific to that method that the user must read prior to using facility instruments. Orientation and training will be provided as described in sections 3.2.1 and 3.2.2, respectively.

4.1 Personal Protective Equipment (PPE)

All PCAF laboratory rooms located on the second floor of the Cliff Fielding Research and Innovation Building require all users to wear lab coats, safety glasses with side shields, full-length pants, and closed toed shoes (no open toes or heels). Additional protection may be required as described in the LU Laboratory Safety Program, for example gloves when handling biological materials or a full-face shield when working with cryogenics. PCAF method specific SOPs identify PPE that is additional to that described in this section (4).

When not in use, lab coats and safety glasses are to be stored in room 205, immediately outside of the PCAF main entrance. Wearing lab coats outside of any lab area, such as hallways, classrooms or offices is strongly discouraged. However, there are exceptions for certain specific tasks, such as transporting cryogenics to outside facilities, where wearing PPE outside of the lab area is required.

Exterior apparel such as jackets or soiled footwear (ex. Winter boots) are not permitted in the lab areas. They can be stored in room 205. Footwear must be clean, and room 205 may be used for a safe place to change and store dirty footwear or other external apparel.

4.1.1 Exemptions

The PCAF is responsible for 2 lab areas on the 0 level (ground floor) of the Cliff Fielding Research and Innovation Building. These rooms are the Workplace Simulations lab (W-SIM) in room 013 and the Nuclear Magnetic Resonance Spectroscopy lab (NMR) in room 018. In the W-SIM room users must wear closed shoes, shirt with no loose sleeves (short sleeve is ideal), hair tied back, no free clothes (no lab coat), and pants. However, shorts are permitted during heat stress studies. All PPE must follow the project specific ethics description. For the NMR lab, PPE as described in section 4.1 is required.

4.2 Hazardous Materials

Many areas in the PCAF are classified with a Chemical Safety Level (CSL) of 3, thus all users must understand the potential dangers in this space and be trained in the appropriate safe laboratory procedures as described in sections 3.2.1 and 3.2.2. Please refer to page 34 of the LU Laboratory Safety

Program for additional information on CSL 3 chemicals. Before handling any hazardous materials, training must be provided by PCAF staff (see sections 3.2.1 and 3.2.2), and the user must read the associated MSDS.

Users cannot bring new substances (chemicals or samples) into the PCAF without approval from the facility manager. All substances must be clearly labelled with the 1) substance, 2) date delivered to the PCAF 3) contact person responsible for the substance and 4) for all purchased chemicals, an MSDS that is filed in the PCAF MSDS binder. All waste products must be labeled as 1) waste and include 2) substance, 3) date created, and 4) contact person responsible for the substance.

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