Student Handbook

Institute of Biomedical Engineering, UNB

September 2019

Introduction

Welcome to the Institute of Biomedical Engineering!

The purpose of this handbook is to provide you with information, which we hope will facilitate your orientation to the Institute and help to make your time here enjoyable and effective.

Your comments at any time, concerning ways in which we can make the Institute a more effective research environment should be addressed to the Student Liaison Officer, Director, or Associate Director.

The Institute of Biomedical Engineering is a multidisciplinary team of scientists, clinicians, engineers, and students that work closely together in collaborative research projects. We value teamwork, professionalism, and a high standard of excellence.

Mission

To further education, research, and community service in biomedical engineering.

Vision

1. Highly qualified personnel trained at the Institute will make valuable contributions to research, clinical service, and Canada's economy.
2. Research will make significant impact in fundamental and applied aspects of biomedical and rehabilitation engineering.
3. Clinical service will offer state of the art solutions for clients and contribute to continuously improving outcomes.
4. The Institute's research and service capacity is an essential resource of rehabilitation expertise in Atlantic Canada, and its role will grow in importance with new partnerships.

Core Values

1. World-class research programs that are essential to the training of students (graduate, undergraduate, and exchange) and staff, making an impact academically and clinically, and attracting continued research support.
2. High quality clinical service with a focus on innovative fittings providing excellent outcomes for patients.
3. The Institute has a strong cohesion amongst students, staff, and faculty that has created a unique institutional culture. This has benefits that are an essential complement to traditional research, service, and training.
4. Research and development activities producing devices and services that have commercialization potential.
5. Triennial Myoelectric Controls Symposium (MEC) is an essential activity, having established the Institute internationally as a centre of excellence. It plays an essential role in advocating progress and collegiality in the field of upper limb prosthetics.

History

IBME was founded by Professor Robert N. Scott, who served as its first Director from 1964-1990. The IBME building was named R.N. Scott Hall in 2002. The IBME was founded in the context of a surge of congenital deficiencies caused by medication administered during pregnancies to alleviate morning sickness symptoms in the late 1950s/early 1960s. In the wake of this incident, there was a large and compelling need to design better prosthetic devices. The IBME focused on providing myoelectric device electronics and control strategies. They went on to offer an annual training session for clinicians on how to use myoelectric prostheses (which has evolved into the internationally-attended Myoelectric Controls Symposium) and did extensive research in pattern recognition and signal processing of myoelectric signals. Under the direction of Dr. Ed Biden [1990-2000], the Institute continued its growth in these areas and extended to include biomechanics expertise and international outreach. Dr. Bernie Hudgins was the next director [2000-2012], and under his leadership the Institute took on a series of high-profile development projects with collaboration from industry. IBME also broadened its scope to look at human-machine interfaces and outcome measures. Under the leadership of Dr. Kevin Englehart [2012-2018], IBME refocused its activities more towards its roots in research, while at the same time broadening its vision to encourage greater collaboration with industry and identifying new platforms and applications for which IBME can provide expertise. In August 2019, Dr. Jon Sensinger, former Associate Director, took on the role of Director. Dr. Sensinger's areas of interest include prosthesis design and control, mechatronics, computational motor control, and exoskeleton research.

A more in-depth history of the Institute, written by Prof. Scott, is found on the Institute's website.

Institute Staff and Faculty

Please refer to the "People" section of the Institute's website:

http://www.unb.ca/research/institutes/biomedical/people.html

This describes their affiliations and research areas.

Building Access and Security

The Institute building is open during normal University hours (8:15 a.m. to 4:30 p.m.) but you may need access at other times.

The Institute front main entrance uses a card reader system. This reader automatically unlocks the front door between 8:15 a.m. and 4:30 p.m., Monday to Friday, and remains locked at all other times. To enter the building outside of regular business hours, simply hold your UNB UCard up to the card reader and the door will unlock. Graduate students will be able to enter through the main entrance using their keycard 24 hours a day, 7 days a week. Student interns and affiliated staff and faculty will have access between 7 a.m. and 8 p.m., 7 days a week. If you forget your UCard and wish to enter outside of regular business hours, call **Security at 453-4830** and they can let you in.

Only students enrolled within the Institute have access to the resources of the Institute.

Whenever you use the building outside normal hours, you incur direct personal responsibility for building security. You must not admit unauthorized persons to the building and must ensure that outside doors remain locked. You must ensure that outside doors and first floor windows are locked, and that lights and equipment are turned off when you leave. Equipment capable of generating enough heat to cause a fire, such as electric kettles, coffee makers, soldering irons, battery chargers etc., require attention.

These considerations apply also when you have occasion to be alone in the building at the end of the day, or on other occasions find yourself the last person leaving the building.

If specific equipment is to be left operating when the building is unoccupied, please ensure that a notice is affixed to the equipment indicating that it is to be left on. Such a notice should be signed (legibly) and should include your phone number.

Any problem associated with building security after hours should be reported promptly to the UNB Security Office, either in person (Campus Operations Building 767 Kings College Rd.) or by telephone (from a campus telephone, ext. 4830 or from a cell phone, 453-4830). In normal hours, contact any Institute staff or faculty.

Safety

Fire Regulations

Please take a few moments to read the fire regulations (posted in Rm 101, Rm 102, and in the reception area on the 2nd floor).

It is important that all persons leave the building immediately upon hearing the local fire alarm and wait outside until authorized to enter by fire or security personnel. **Our designated meeting area is in front of the Bank/Bookstore building next door.**

Personnel Safety

Katie Wilson is the Building Safety Officer. Any safety hazard should be reported to the Building Safety Officer, who will take the necessary steps to have it corrected. Any accident should be reported immediately to both the Building Safety Officer and to the Campus Safety Coordinator (Phone 5075). An incident report should be filled out as soon as possible with the Office Manager. Any accident occurring outside normal hours should be reported to UNB Security (Ext. 4830).

To have appropriate protection in the event of an electrical accident, any work involving access to electric potentials in excess of about 50 volts is restricted to situations in which there are at least two persons in the building and the second is made aware of the activity being carried out. Note that this policy is necessary both to protect the individual and to protect the Institute, which may be held liable for the consequences of an accident if adequate supervision was not ensured.

Scent-Free Policy

The Institute has a scent-free policy. Our personnel and patients may have sensitivities to scented perfumes, colognes, body sprays, and grooming products. Chemicals in the fragrances can trigger reactions ranging from headaches to heart palpitations in people who are sensitive to them, making it difficult for them to work effectively.

Facilities

Shop-safety training is required before students use any of the equipment in the clinic (in addition to other requirements described below). This training is available several times throughout the year through the Mechanical Engineering department. Please let your supervisor know you need to take this training, and we will coordinate with you regarding the next available session.

Atlantic Clinic for Upper Limb Prosthetics

The facilities for the Atlantic Clinic for Upper Limb Prosthetics are beyond the glass doors to the left of the main floor elevator. This hallway is considered a professional clinical space and is not to be used as a throughway to other parts of the building. If you have an interest in prosthetics or have questions about the clinic or how it operates, you are more than welcome to talk to the clinic staff when they are not busy with patients.

Under no circumstances are tools or facilities of the clinic to be used, unless:

a) You have received shop-safety training;
b) You have been given permission after filling out the form described above;
c) The Prosthetics Technician has confirmed that it is ok, at that point in time, to use the equipment. This decision can change hour-by hour depending on what clinical activities are occurring within the clinic.

The front foyer and waiting room are used frequently by patients of the clinic. Please respect that this is an area where patients will be waiting and sometimes consulting with clinic staff by acting professionally. Information regarding patient identity or treatment within the clinic must be kept confidential.

The kitchen and play room on the lower level are intended as patient training areas. If they are in use by clinic staff and patients, please be respectful and wait to use those areas if possible. If you need to access something in the kitchen when a patient is present, ask permission before entering. If you use the kitchen facilities, please ensure the space is tidy and clean when you leave. Wash any dishes, utensils, or surfaces so that the space is acceptable for patient use at any time.

If the playroom is used by your children or visitors, ensure toys are clean and put away before you leave. Toys are specifically purchased and maintained for training purposes for children learning to use a prosthesis.

Electronics Shop

To maintain reasonable efficiency in the Institute, no tools or instruments are to be used at or removed from any staff or faculty bench without the permission of the faculty or staff member concerned. Technical services, tools, and equipment will be made available for student use upon request.

Mail

The Office Manager will inform you if you receive any incoming mail. Outgoing personal mail, properly stamped, may be left in the mail bag. Consult the Office Manager for details of delivery schedules, etc. There is a Canada Post mailbox located outside of the Campus Bookstore.

Telephones

The telephone (local number 506-458-7032) in Rm. 120 has been provided partly for student use, so that you will not have to intrude upon a faculty or staff office to use the telephone.

The telephone on the Office Manager's desk is not to be used for outgoing calls of any type, as that prevents outside access to the Institute. Calls received on that telephone will be transferred promptly to another telephone, to leave the incoming line free.

Outgoing calls can be placed from any telephone on the UNB service; dial 9 plus the seven-digit number for local calls. Outgoing long-distance calls may be dialled direct; dial 9-1-area code-seven-digit number. However, *long distance charges are not to be incurred by students without prior arrangement with the Office Manager.*

Facsimile

Students wishing to send a FAX message, please consult the Office Manager. Incoming FAX messages for students may be directed to the Institute's FAX machine, 506-453-4827. Incoming FAX messages are queued to the Office Manager's email address.

Photocopier and Printing

General use of the photocopier and printers is permitted without charge. If a thesis or large report is to be photocopied, please consult the Office Manager first. The Institute faculty and staff refrain from photocopying or printing unless necessary; please adopt the same policy. Details of installing the Institute printers on your personal computer can be obtained from the Project Engineer.

Data Collection Laboratory

This lab may be reserved by faculty, staff, or graduate students. There is a Google calendar used to reserve the room. Because experiments often require long blocks of time, there is no formal limit on the duration of reservation. Your cooperation in keeping blocks reasonable is requested, however, in consideration of other users.

Several standard electrode lead sets are available; do not remove these from the lab. If your research requires special electrode/lead configurations, these will be provided after consultation with your supervisor. Please do not destroy general purpose lead sets to create special ones.

Any maintenance, modification, or adjustment of lab equipment or software is the responsibility of the Project Engineer and should not be performed by any other individuals. Should any equipment or software appear to be working incorrectly, please notify the Project Engineer immediately.

Specialized lab equipment that is generally not stored in the data collection lab is available. Use of this equipment is by arrangement with your faculty supervisor.

Motion Analysis Laboratory

The Motion Analysis Laboratory is equipped with highly sensitive instrumentation and therefore any student wishing to conduct research in the lab must first complete a lab training session. Any students wishing to schedule lab time or book a training session are asked to contact the Project Engineer.

Electronics Lab

There are two work benches in the electronics lab designated for student use. If you require workbench space, please make arrangements with the Project Engineer.

No equipment, tools, or components are to be used or removed from the electronics lab unless authorized by the Project Engineer.

Any equipment or tools borrowed from the electronics lab are to be returned immediately after use.

When the Project Engineers is not present the electronics lab equipment and tools are off limits unless given previous authorization.

Computing

Calendars

IBME uses Google calendars to coordinate meetings between staff and students, as well as to reserve rooms (such as the Motion lab). Once you have created a Gmail account, please ask Jon Sensinger (jsensing@unb.ca) to add you to the appropriate calendars, and please put your Gmail e-mail address on the following list: www.tinyurl.com/unb-ibme-people.

Human Experimentation

Experimenter as Subject

In cases where the experimenter is also the subject of the experiment, it is not necessary to acquire ethics approval or file a consent form. However, there must be another person in the building and aware of the research, for safety purposes.

Ethics Approval

It is a minimal requirement of ethical research that no experiment be conducted on a human subject without approval from the University Research Ethics Board.

To obtain appropriate consent forms, consult the Director or your supervisor.

All students performing human research are required to take the TCPS2 Ethics Training.

Data Storage

All research data generated during your time at UNB belongs to UNB, and may not be taken by students once they leave UNB without permission.

All data that contains personal health information (subject names, photographs, videos, etc.) must be stored in a locked file cabinet or a password protected, encrypted folder on a computer. All data used on personal computers should use de-identified subject codes. Truecrypt (http://www.truecrypt.org/) is a free, open-source encryption package that can be used to encrypt photographs and videos.

No personal health information (including unencrypted pictures) may be stored on laptops or phones.

IBME Activities

Tea/Coffee Break

Typically, around 2:30 p.m., we like to gather in the kitchen for a tea/coffee break. An announcement is made over the PA system to invite everyone downstairs). Some will bring their own coffee pods or tea bags, or you can purchase goodies from the Snack Bar (maintained by the Office Manager).

Snack Bar

There are several snacks available for purchase in the kitchen. A price list is on the fridge and money can be placed in the cup above the stove. There is also a sheet for IOUs. The snack bar runs off the honour system and all proceeds go directly to the IBME Slush Fund, which is used for social activities.

Journal Club

The students conduct a bi-weekly journal club that covers recent high-profile articles, articles specific to student's work, and review / tutorial articles.

Weekly Student Lunch

The students meet weekly for lunch on Thursdays at noon in the IBME conference room. This is an informal gathering in which students bring their own lunch, and typically rotate who brings dessert for the group. It's a weekly chance to get to know all the other students better.

Intellectual Property

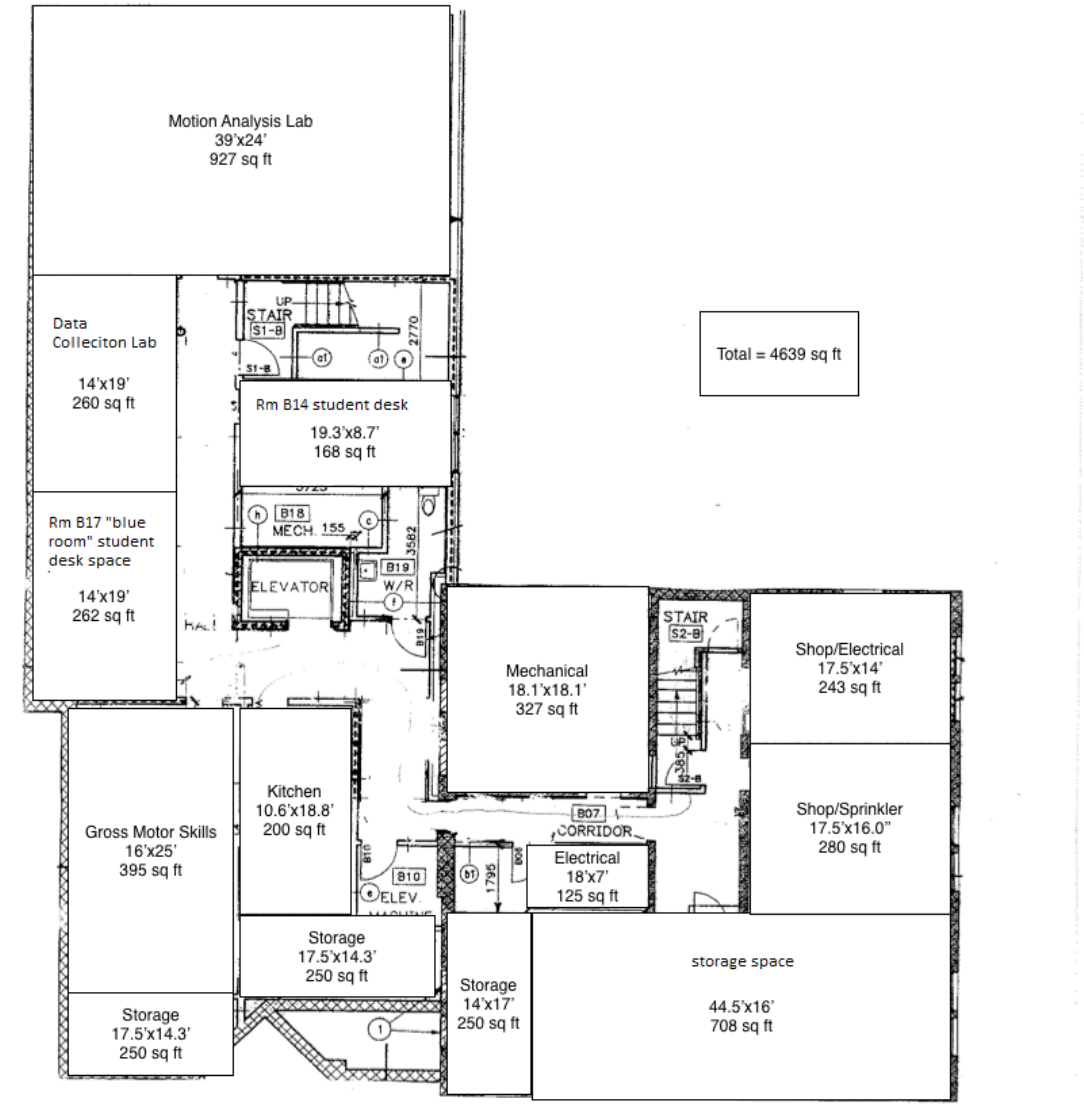
Intellectual property (including potential patents, copyrights, board layouts, and trade secrets, as well as others) are routinely created at the Institute of Biomedical Engineering. This property must be secured (e.g., filed with the government) before it is released. Please consult your advisor prior to disclosing your work to any outside group (including class presentations, posters, interviews, and reports) to see if IP should be secured prior to the disclosure.

Some projects at IBME are funded by sources that require that intellectual property be assigned to the Institute, to have a single point-of-contact during negotiations with potential commercial licensees. Please ask your supervisor if your project falls under such a funding source.

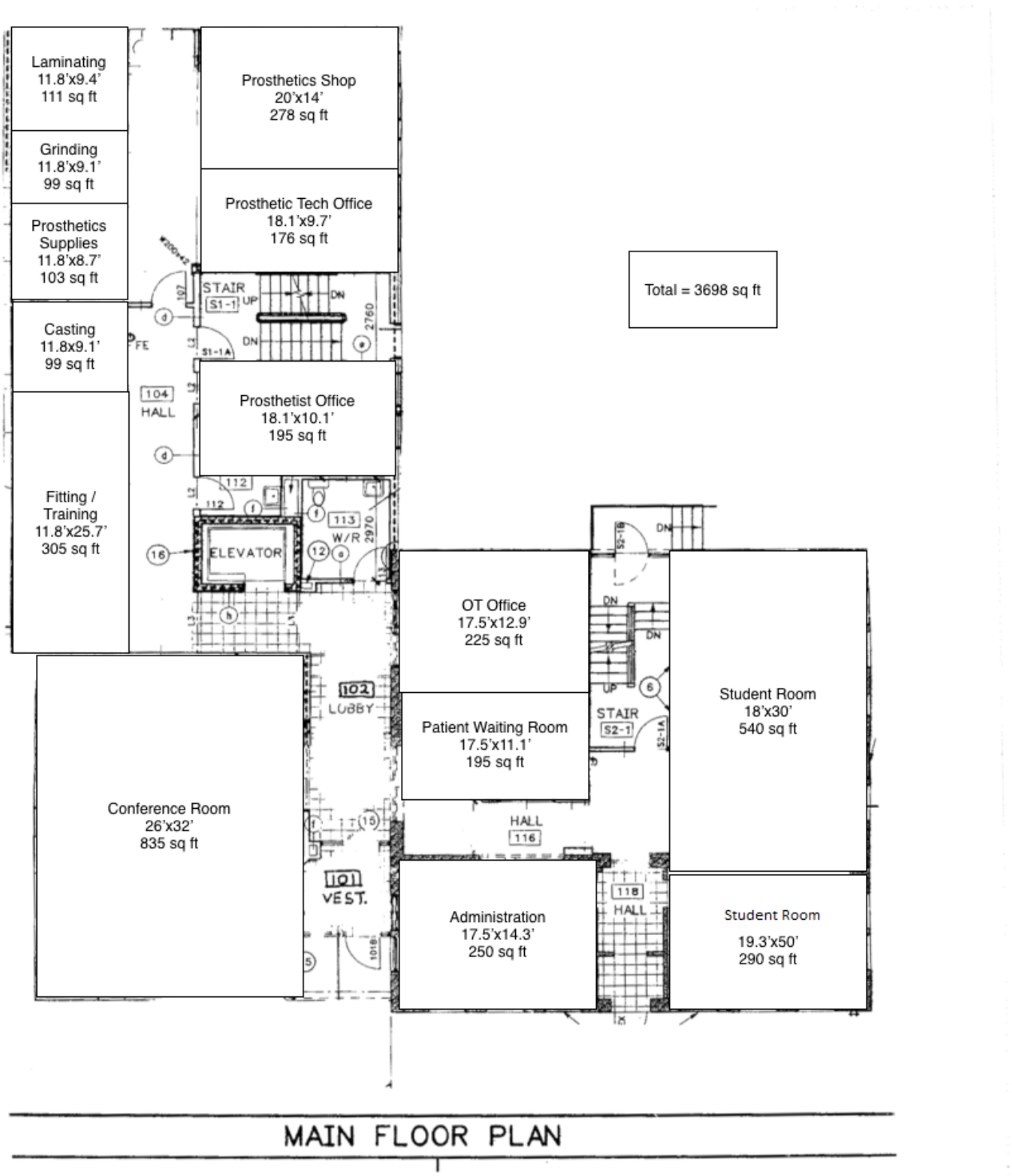
Media

The Institute is frequently at the centre of attention of the media. It is important that the activities of the Institute are represented in an accurate manner. If you are asked to speak to the media, please contact your supervisor or the Director/Associate Director prior to doing so. If you are approached by the media in an unexpected manner and are asked to comment, please be sure that your comments are accurate and appropriate, and that it is clear that you are representing yourself, not the Institute.

Building Layout



BASEMENT FLOOR PLAN



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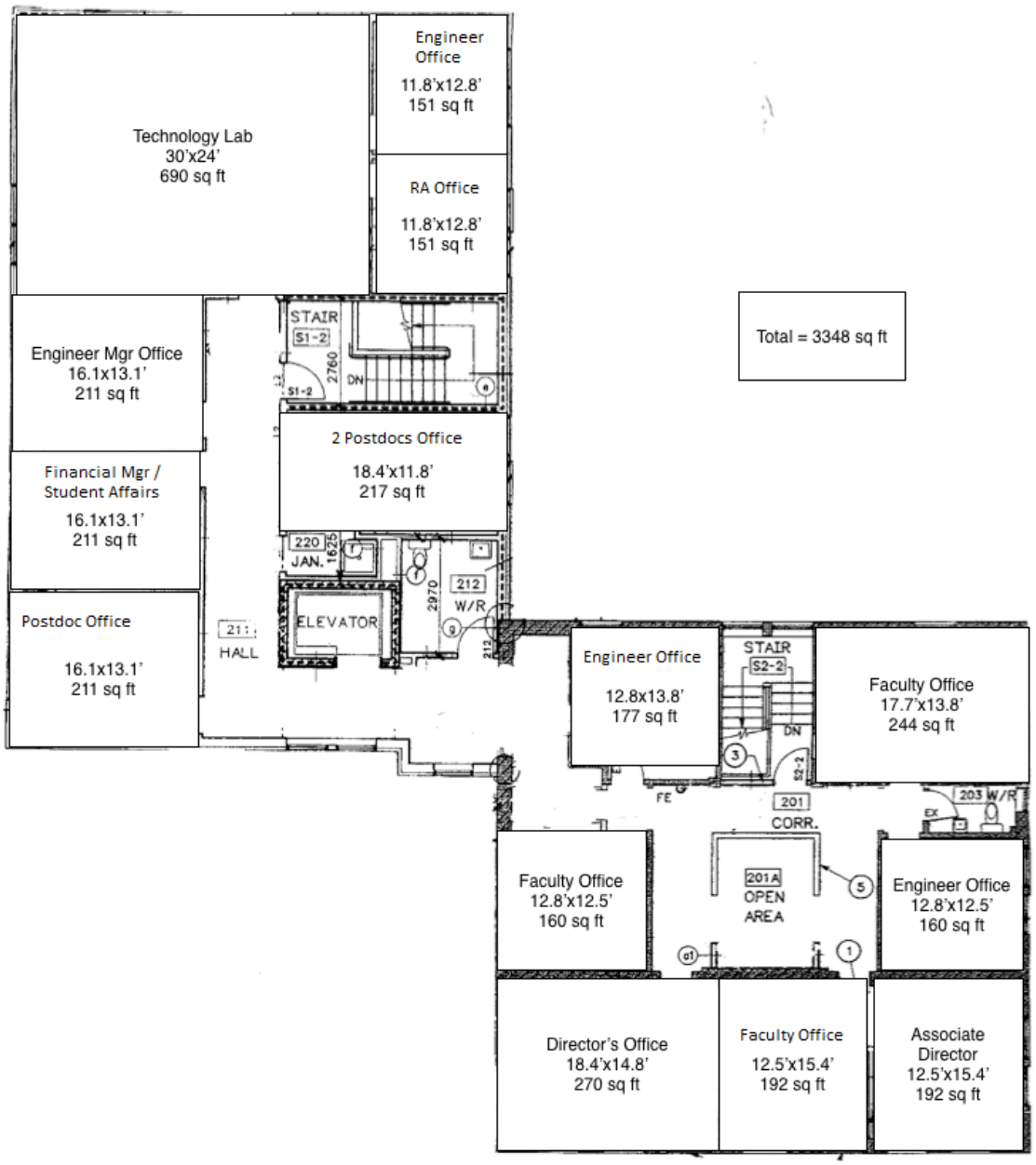

SECOND FLOOR PLAN