

MALASPINA UNIVERSITY-COLLEGE

Faculty of Science and Technology

*Department of
Fisheries and Aquaculture*

Student Information Guide

September, 2007

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1.0 INTRODUCTION

Welcome to the Fisheries and Aquaculture Program. The following pages are intended to answer some of your questions and provide a statement of Department policy for your reference. If you have any concerns or questions, please contact a faculty or staff member (refer to section 10.1). However, if you have any questions regarding the program during the academic year, refer to **this** manual **BEFORE** talking to a faculty member. You can also visit our website at www.mala.ca/fisheries.

2.0 OBJECTIVE

The objective of this program is to develop well-rounded technologists with a strong, flexible background both in Fisheries and in Aquaculture. This requires that personnel develop skills and an increased understanding in a variety of areas outside of fish and invertebrate husbandry, such as administration, communication, and engineering. Furthermore, in an attempt to provide a foundation for future developments and a broader understanding in Fisheries and Aquaculture, the student is exposed to techniques and species not necessarily locally exploited nor available.

3.0 PROGRAM ADMINISTRATION POLICIES

3.1 *Standards*

Progress within the program is governed by adequate grades. In the event a student receives a "D" or an "F" as a course grade, the instructor and/or program Chair **must** be approached to discuss remedial action. Generally, courses cannot be retaken within the 2 year time-frame due to timetable restrictions.

Students who have more than two "D"'s, or one "D" and an "F" or two "F"'s must withdraw from the program for a minimum of 1 year. This student will not be re-accepted the following academic year, but is encouraged to **reapply** after one year's absence

3.1.1 *Field Practicum:*

An "F" (Fail) in one of the "field" courses (Aqua 171/172/371/372) means an automatic and immediate **EXPULSION** from the program. For further details, refer to section 5.0 (page 9).

3.1.2 Grading System:

Instructors will announce the grade system for the course in question at the beginning of each term or should be approached to determine the means of evaluation. Many of the courses involved in this program are difficult to grade easily and fairly due to their practical nature. Therefore different courses within the program may have different grading schemes to accommodate this. Every attempt, however, has been made to satisfy the needs of those persons seeking scholarships or concerned with marks for further education.

Keep in mind that the field practicum courses use a unique grading scheme. For further information, refer to page 12.

3.1.3 Plagiarism:

Students should refer to policy 99.01 in the Malaspina University-College calendar (under the Academic Misconduct section). The first offense will result in either i) a mark of "0" on the assignment or exam or, ii) an "F" for the course at the discretion of the instructor. If a second offense occurs, the student **will** receive an "F" for that course and be expelled immediately from the program. Although the University-College calendar is quite clear on what constitutes plagiarism, there are sometimes gray areas and an unwary student might inadvertently make a mistake without realizing it. See the Calendar on Academic misconduct" under the section, "Student Conduct Policy". Read this carefully and under "plagiarism" please note the following..." appropriating the work of another, or parts or passages of another's writing or ideas or language of the same and passing them off as the product of one's own mind or manual skill..." This is the Malaspina definition of plagiarism. It could mean copying another student's paper, turning in a "bought" paper from another university (even one you wrote yourself for another course), using text from published works without clear quotation marks and the reference from which the passage comes. If a passage in a book or article is so well phrased that you feel you must use it, then it is perfectly permissible to do so as long as you obey the quotation mark rule. Usually it is best to get several sources together, come to an understanding of what they express and then write this in your own words, clearly referencing all of your sources (e.g. Jones, 2002, Rogers, 2004). Referencing is also important even when you are not using the exact text. In scientific and technical writing referencing is usually intense. Think of this as always giving credit to others for their work and ideas. Remember that citation is not the same as quotation. If you are unsure, take a sample of your paper in progress to an instructor to seek guidance.

These rules also apply to figures. If you are using a Xeroxed figure, clearly state that this is so and show the exact source of the figure including page number and full reference. Use of figures in this way is not usually recommended since it may contravene copyright laws. If you create your own figure but use another figure as your inspiration, then clearly state this (e.g. Figure after Jones, 2002, p45).

3.2 *Withdrawal*

Any student having difficulty should discuss their situation with the Program Chair and/or relevant instructor **before** doing anything rash. We will do our best to help but in order to assist you, we must be informed of your situation. Please note that student services offer a variety of courses and advice on study skills, time management, financial aid, etc.

3.3 *Failure Grades and What To Do*

If you fail a course, you must talk to the instructor to examine options, and/or talk to the Program Chair.

3.4 *Awards*

Students in the program are eligible for general Malaspina scholarships, as well as awards limited to the program. Note that there are **more** than 10 Fisheries/Aquaculture scholarships/bursaries available. Refer to the F/A website or contact student services for more information. Keep in mind that a high percentage of students in the Fisheries and Aquaculture programs (Diploma and B.Sc.) deservedly receive awards.

3.5 *Student Supplies/Equipment*

Students are reminded to carry spare dry clothing with them on field trips and during their field practicum. It is not uncommon to become wet (and cold) due to bad weather or mishaps.

3.5.1 *Required supplies:*

(estimated cost - \$600)

- a) Industrial-style rain gear
- b) Chest waders
- c) Rubber boots
- d) Sharp knife or "Leatherman type" survival tool
- e) Field notebook with waterproof paper
- f) Journal (see Item 5.2)
- g) Safety goggles/safety glasses
- h) Lab coat

3.5.2 Recommended supplies:

- a) Polarized sunglasses – Highly recommended if not mandatory for those planning to work in fisheries.
- b) Personal computer with appropriate software
 - This allows you to work at your own pace. Malaspina University College provides some student computers but these are heavily used, except during odd hours. Software can be purchased through the bookstore, many times at the best price.
- c) Personal vehicle — Transport to remote field sites is possible only for those students who have access to a vehicle on the field days.

3.6 Transportation/Accommodation

Students will make their own arrangements for transportation to and from practicum sites and most field trips. **Car-pooling is highly recommended.** In some cases only, Malaspina may provide transportation for field trips. Any out-of-town accommodation/food is the student's responsibility.

Where Malaspina vehicles are provided, the driver must hold a valid Class 4 (or higher) driver's license and be registered with Malaspina University College (Malaspina policy). Attendance on field trips where Malaspina provides transportation is mandatory. If significant extra costs are involved, attendance may be optional. You must first discuss this with relevant faculty.

3.7 Use of Malaspina Equipment and Facilities

"Make a mess, clean it up": the course is **Not** completed until everything is clean and put away. The facilities and equipment are here for all students and staff to use. A clean work area is **mandatory**, here or in the field, for reasons of stock hygiene, safety, and developing a good work reputation for yourself, for our facility and for the program (job references).

Note: Failure to develop good working habits **will** be reflected in course marks. For example, 25% of your project mark (90 series) is based on the cleanliness in your work area. Unscheduled inspections of the various project work areas will occur regularly. Any "mess" will be reported to the respective supervising faculty member upon which disciplinary action will take place including a reduction in your project grade.

3.8 COOP Education

The Fisheries and Aquaculture program at Malaspina is a Cooperative Education program. During the fall semester, there will be an orientation session after which students may apply for this option. Successful candidates will follow one of the following schedules.

Schedule 1

At Malaspina: First and second semester (fall and spring)
Workplace: Summer and fall semester
At Malaspina: Spring semester (third semester)
Workplace: Summer
At Malaspina: Fall semester (fourth semester) - graduate in December

Time to graduation is 2½ years

OR

Schedule 2

At Malaspina: First and second semester (fall and spring)
Workplace: Summer, fall, spring, and summer
At Malaspina: Third and fourth semester - graduate in June

Time to graduation is 2¾ years

The employer will likely determine the schedule any one student chooses. Interested students should discuss the COOP education option with Don Furnell (COOP Education Coordinator).

Note: Advance credit may be granted **to COOP students only** for one semester of field practicum (AQUA 371 or AQUA 372) to compensate for a fall or spring COOP placement.

4.0 STUDENT PROJECTS (AQUA 191T/192T/291T/292T/392)

Projects provide students with further practical experience, and the opportunity to self-tailor the experience and to experiment with unique species. Various project facilities associated with the program are available, and teams of students are assigned to each project. The team is responsible for all aspects of the facility, in consultation with the project faculty representative. Thus, the student is exposed to the daily and seasonal routines with the continuum provided by a single facility. Students can expect to spend 5 to 8 hours on average per week at their projects, which often includes working on weekends.

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As with most aquaculture endeavours, "**THE CRITTERS COME FIRST**" means that the welfare of the animals or plants **takes priority** over all other activities.

Each project "team" may consist of both diploma and B.Sc. students. The project work is organized with the assistance of faculty, and adequate records are maintained throughout the terms.

At the end of **each** term, submission of individual project reports may be required for evaluation (discuss this with the faculty representative at the beginning of each semester). Details on how the project records should be kept and on the final report are appended at the end of this information package (page 21). Available projects include the following:

- Algae and Larval Rearing Project
- Chase River SEP Hatchery and Field Studies
- Disease projects (individual and limited to second-year students)
- Shellfish Project (Invertebrate Culture Projects)
- Sturgeon Project
- Trout Hatchery Project
- Warm Water Fish Project
- Other individual projects (must first be discussed with project coordinator).

Project tours will be arranged within the first week of classes. After the tours are complete, each student will complete the student questionnaire (separate handout), which includes the ranking of three projects in order of preference. A project will then be assigned to you based on your requests and the labour requirements of the various projects. Every effort will be made to place you at your first choice but due to limited project sizes, you may be assigned to your second or even third choice. Note: You may change your project after the first semester **only** if there is room in the prospective project.

Note: It is mandatory to keep a daily journal of your project activities. This eases the report writing and some instructors require that you submit your project journal for evaluation. Suggested points to include are: what you did, why it was carried out, what chemicals were used and how were they prepared, why they were used, what you observed and possible improvements, just to name a few.

5.0 FIELD PRACTICA (AQUA 171T/172T/271T/272T/371/372)

Coordinators: Drs. Duane Barker (barkerd@mala.bc.ca) and Stefanie Duff (duffs@mala.bc.ca)

5.1 *Purpose of field practicum apprenticeship*

The objective of the field station experience is to provide practical experience and exposure to the industry to complement the academic classroom environment. Think of the practicum as a fisheries and aquaculture apprenticeship. Throughout the practicum you may be assigned work which can be routine and sometimes arduous. However, this is representative of any workplace and it is imperative that you understand the full working array of your chosen field. Often it is in the details of a job that true skill development takes place.

Your field apprenticeship will occur on a weekly basis throughout your diploma. This totals two years for diploma students, one year for B.Sc. students and one year for the post-degree diploma students.

In your first year of the practicum the field sites are chosen for you by the field practicum coordinators (Drs. Barker and Duff). Your field practicum locations will be posted on the bulletin board outside of our teaching lab (room 103). You will visit the same site for 3-4 consecutive weeks and then rotate through other sites each Tuesday of the semester (see section 5.6 for potential sites). Your field site assignments will be interspersed periodically with day-long skill-training sessions designed to augment your apprenticeship and help you to succeed both in the work place and in the classroom. These practicum days will occur here at Malaspina University–College and be dedicated to bettering your study, communication and time management skills, learning computer skills, creation of resumes and cover letters as well improving your interview skills.

In second year, you will select your field site prior to the beginning of the term in consultation with the field practicum coordinators and will remain at one station for the duration of the year.

Remember, it is your responsibility to maximize the benefit procured at your practicum field site. At the field site, we expect you to be constantly learning, observing and working well with other employees. It is appropriate (and expected) to ask relevant questions concerning the functioning of the site and details regarding your specific duties. Benefits of these short apprenticeships often include employment opportunities, either at that particular site or at other associated sites. As these field sites are often looking for new employees you should be aware that staff of the host facilities will be closely observing your performance and attitude, and sharing these evaluations with other sites. Students who work hard and enthusiastically, remain interested in their tasks and communicate well are

remembered in a positive light and the benefits follow accordingly.

We hope you enjoy your days in the field as this is very integral part of your educational experience as well as a unique opportunity granted to you by the Fisheries and Aquaculture department.

5.2 Journal

You, the student, must purchase a hard cover notebook (~23.5 cm by 18.6 cm) for use as your field journal.

The purpose of the journal is to provide yourself with a record of useful information including observations and answers to questions you may have. The value of the field experience is greatly enhanced if it is recorded and analyzed. In addition, writing skills improve when critiqued and subsequently marked by faculty members. Furthermore, this journal will provide you with recorded evidence of skill training experiences — this will be essential for future employment. The journal is a personal record of your experiences, contacts, observations, comments, and opinions. It is therefore, considered confidential between yourself and the faculty

5.2.1 Journal Layout

I: Print your last name on all three exposed sides of the journal so that you can readily identify and retrieve your journal from the stack located in the coffee room.

II: The **first two** pages of your journal **must** have the following layout:

TABLE OF CONTENTS, field site locations of “(your name) “

DATE	FIELD STATION	DAY #	PAGE	MARK GIVEN	MARKER INITIALS	DATE MARKED
10/9/07	Big Qualicum	1	4	(These columns for faculty use only)		
17/9/07	Big Qualicum	2	10			
24/9/07	Big Qualicum	3	13			
1/10/07	Malaspina U-C	1	15			
8/10/07	Nanaimo River	1	16			

III: Start each field day on a new page. Remember to number all pages making it easier for faculty and yourself to find specific entries.

EXAMPLE ENTRY OF A PRACTICUM WRITE-UP

Note: *this example entry is typed; however, clear, hand-written entries are perfectly acceptable.*

Date: September 10, 2007

Location: Big Qualicum River Hatchery. Follow Highway 19 north to Horne Lake Road. Turn right and look for the hatchery sign after you cross railway tracks. Park in the area designated for the general public. (**NOTE:** *Your first entry at a new site must include a detailed directions, but subsequent visits only require a reference to this entry.*)

Conditions: Partially cloudy with some rain and wind. Air temperature 18°C, water temperature 7°C.

Category of facility: Federal government salmonid enhancement hatchery (**NOTE:** See section 5.6 for category of facility).

Contacts: Les Clint—Site Manager—Telephone (250) 757-8412
Alvin Smolt—Assistant Manager
Sandy Shore—Labourer
Karen Smith—**Student partner**—Telephone (250) 777-1111

Summary/Overview: This facility rears approximately 25 000 Pacific salmon such as coho (*Oncorhynchus kisutch*), and pink salmon (*Oncorhynchus gorbuscha*) annually. In the spring, the eggs needed for the hatchery are obtained from wild brood stock located on the site (Fig. 1; **NOTE:** *All figures need to be labeled with a title and a figure number.*). Both males and females are squeezed to obtain milt and eggs (**NOTE:** *It is best that you describe this procedure in detail the first time and subsequently refer to this procedure*). The eggs are placed in a clean bucket and milt is added to fertilize them (**NOTE:** *More detail such as the size of the bucket, the number of the eggs and the ratio of sperm to eggs is considered a better entry*). These eggs are then taken to the heath stacks where they can properly develop into viable offspring (Fig. 2). This development takes about 30 days if all goes well. Problems associated with the process include poor egg/milt take, poor fertilization, non-sterile equipment or disturbing the eggs prior to their eyed stage. If the eggs are disturbed prematurely the shock disrupts their development and they cease to develop.

The young fish (alevins) are moved from the heath trays to one of the 5 meter diameter holding tanks (Fig. 3). They remain in the holding tanks for approximately 1 year after which time they are transferred to the wild (**NOTE:** *Specifics on locations of release are good to include.*)

Duties performed: Upon arriving at the farm at 8:00 AM, I was instructed to clean two of the five meter diameter tanks. These tanks were void of water and were being prepared for new *O. gorbuscha*. Firstly, a special scrubbing brush fastened to a 2 meter handle was used to remove most of the buildup (debris) on the tank walls and base. Once this was done, the tanks were rinsed with a solution of ovidine (**NOTE: Best to describe the function of new equipment or facilities when you first comment on them.**) to disinfect the tanks. This cleaning process took until 10:00 AM.

After coffee break, I was instructed by Sandy to clean the feed shed. The feed was everywhere and it required two hours. After lunch, I continued cleaning five meter tanks in the same manner described previously. However, these tanks still had water in them which made cleanup faster and easier. I finished at 4:15 PM.

(**Note:** At this point it is a good idea to add commentary such as what you saw or heard, or answers to questions that you asked during the day or thoughts you have regarding the whole process).

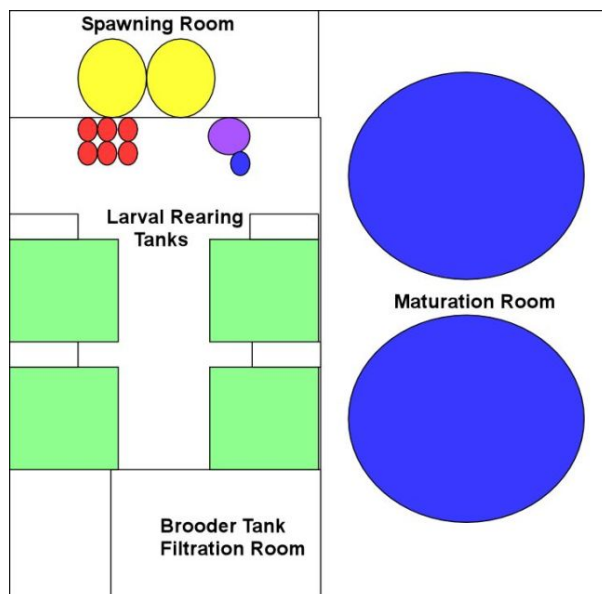


Fig. 1 Big Site lay-out. _____ = 10 meters.

Qualicum River Hatchery

(**NOTE:** Here only Fig. 1 is shown. However, as three figures were referenced three figures should be displayed).

IV: Suggestions and/or comments to create high quality entries:

You will see comments and suggestions for improvement in your journal entries from faculty members throughout the semester. We expect you to read these comments and incorporate them into the following entry.

1. Use and correctly label diagrams wherever possible (figure number, title and description). Figure titles go below a figure, table titles go above a table. The figures help the reader (and yourself in the future) understand the setup, layout, etc. plus, they make your entry look more professional.
2. Explain yourself whenever possible. Make the journal entry complete without adding unnecessary jargon. Do not assume that the reader knows or fully understands brief comments. Include and underline genus + species names (e.g., Salmo salar) of animals you describe.
3. Add your personal comments about the site, personnel, working conditions, improvements, etc. as long as they are objective (**Note:** *faculty will also be reading and evaluating this part of your entry*). These comments demonstrate to the faculty that you are assessing the working conditions and applying your knowledge to each situation.
4. If you make an error or do not like what you wrote, cross out the information using a single line only (scribbling out information looks unprofessional and the reader may question the validity of the current entry).
5. The entry MUST be very legible. If the faculty member cannot read your entry, he/she will most likely add comments in the margins and, you will probably receive a lower grade than expected or deserved.
6. Use the comments provided by faculty as a means of improving your future journal entries. If you do not use the advice of faculty, future entries will be graded lower. It is in your best interest to learn from these comments. Faculty refer back to earlier entries to see if you have acknowledged and utilized the advice provided.

V: Submitting your journal:

After you have completed your journal entry place your practicum notebook on the appropriate shelving units located in the lunch room on the main floor of the Fisheries and Aquaculture building (380). These shelves are labeled Tuesday or Thursday practicum, with the left side for submitted journals and the right side for corrected journals.

5.2.2 *Journal Contents*

For each field day entry, the information to be noted **must** include:

1. Date, location, weather, partners and contacts (site manager, workers, etc.);
2. Summary and category of facility (usually on first day at the site you would give a broad overview including a site diagram and then, on subsequent weeks, give a more focused (detailed) explanation as required);
3. Duties which include: work assigned, techniques used, what you learned, your opinions of how things are done at the facility and questions regarding the facility/work.

Note: Include sketches, brochures, and photos, as required.

Journals are to be handed in by 4:00 p.m. on the day following the field day. Typically, this is on Wednesday at 4:00 p.m. for first-year students, and on Fridays at 4:00 p.m. for second-year and B.Sc. students. **Note: 10 % will be deducted for each day late.**

Up to twelve entries are generally required per semester (required number for the given semester will be posted). Failure to complete the required number of entries will result in an “**INC**” for this course, which reverts to an “**F**” after 3 months . Refer to section 5.4 for further information.

5.3 *Performance and Safety*

The purpose of the field program is to provide the student with industry experience and exposure. If you are paid for your services, you are **NOT** covered under Malaspina’s insurance policy. Therefore, you must not be paid for services rendered during the scheduled field days. Failure to follow this rule will result in remedial action. An agreement between the field site personnel and the student can be made if it entails working at the site outside of the scheduled routine.

The student is expected to treat the field station assignment as an apprenticeship to a potential job; however, under no circumstances is the student expected or required to perform tasks in a manner, which are unsafe or illegal. If any problem develops, the student should refuse to risk their (or anyone else's) safety. It is required to document such incidents, and report it immediately to one of the field program coordinators.

5.4 *Marking*

Journal entries are read and commented on by a faculty member each week, and a mark is assigned for both the write-up and for attendance at the site. Every effort will be made to return the journals the day before the student goes to their field station. This means that first year student journals will be returned by the **Monday** following their submission and second year journals by the **Thursday** following their submission.

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Note: *An unexcused absence for any field day or any part thereof may result in disciplinary action. Based on the severity of the situation, the student could obtain an "F" for the entire course and enrollment could be **terminated**. A less severe action is to allow a maximum grade of "C" if the student continues with high caliber entries for the duration of the semester. Faculty will decide which course of action is to be taken (case by case assessment).*

In the event of enforced absence due to sickness, snow, etc., **it is the responsibility of the student to contact both the site manager and practicum coordinators before 8:30 am on the day of the field practicum to inform them of your absence.** You are then required to write one page in your journal regarding the missed field day (station, who you were able to contact, when you informed him/her of your status and, the reason for your absence) and, make up the missed field day. Failure to **i.)** contact your field site **and** practicum coordinators, **ii.)** complete the one page write-up and, **iii)** make up the missed field day prior to the semester's end will result in an "**unexcused absence**" and an "**F**" in the practicum course thus, terminating your enrollment.

Acceptable **waived** field days include:

- sickness with a doctor's note (call the site if you are ill the morning of your field day);
- permission from the field coordinator prior to your field day;
- accidents en route to the station (write up all particulars in your journal and contact the station and Malaspina as soon as possible);
- Poor weather (Malaspina is closed and/or field site suggested that you **NOT** turn up).

Note: - *If any of the above acceptable events occur, you are only required to complete steps i) and ii) above.*

IMPORTANT: If you cannot make it to the field site you are expected to come to the Fisheries & Aquaculture Department here at Malaspina and work here for the day.

Field Practicum Grading Scheme:

The grade system is based out of **10** and the student's overall grade is based on their average for the semester. Participation accounts for half of your weekly grade and the other half is from your journal entry. The grading system used to evaluate students at their field station **differs** from the standard grading scheme due to the nature of this course. The following system has been adopted: **A+** 9.7-10, **A** 9.3-9.6, **A-** 8.9-9.2, **B+** 8.5-8.8, **B** 8.1-8.4, **B-** 7.7-8.0, **C+** 7.3-7.6, **C** 6.9-7.2, **C-** 6.5-6.8, **D** 6.0-6.4, and **F** < 6.0.

Late submissions:

- the penalty is 1 mark per day late;
- after 1 week late, the grade is 0.

5.5 Frequently asked questions (FAQs)

1. How do I set up my journal entries?

See page 12 of this handbook.

2. What do I do if I am sick?

Contact your field site and practicum coordinators prior to 8:30 am of your practicum day. A doctor's note will allow you to be excused from the day; otherwise, it will have to be made up.

3. What do I do if the weather is bad?

Contact the Malaspina web site (www.mala.bc.ca) to check for closures. If Malaspina is closed, you are not expected to attend your field site. Contact your field site and practicum coordinators prior to 8:30 am of your practicum day. Sometimes your site contact will suggest you do not drive to the site (e.g., the weather in Port Alberni can be bad before Nanaimo).

4. What do I do if I am sent home from the field site due to lack of work?

Contact your practicum coordinators ASAP, then you may be asked to return to Malaspina to continue.

5. What do I do if I have missed my ride or if I have vehicle problems?

Contact your field site and practicum coordinators prior to 8:30 am of your practicum day. This is NOT an excusable absence. You will have to make up the day by coming to Malaspina and reporting to the Fish/Aqua hatchery to work with Frank, Gord or Anne.

5.6 Station Assignment Policy

First-year students are randomly assigned field stations, attempting to provide a variety of experience. Distances to field sites vary and you should expect to travel up to 200 km per week to the most distant sites **Therefore, it is highly recommended that you car-pool with students going to nearby stations whenever possible.** In second year, a practicum station will be selected by the student in consultation with the practicum coordinator, with the objective of tailoring the experience to the interests of the student. This may be the 4-week rotation as in first year or remaining at the same station all year. In maximizing the student's benefit, you may work weekend stints, doubling up days, etc. (You must obtain approval from the field coordinator if your routine is not on Thursdays).

5.6 Regular and Potential Field Practicum sites

- 1. Big Qualicum River Hatchery** (ETA 1 hr) Les Clint cell: 757-8412
Category: *Federal government salmonid enhancement hatchery*

Follow Hwy. 19 north to Horne Lake Rd. Turn right and look for hatchery sign after you cross railway tracks (#215 Fisheries Rd.). Park in the area designated for the general public.

- 2. Centre for Shellfish Research** (CSR; on Campus, Building **373**) Tel: 753-7345
Category: *University & Industry Research Facility*

Contact: Simon Yuen (or see contact list for CSR) ext. 6359

- 3. Cowichan River Hatchery** (1 hr) Don Elliot Tel.: 746-5741
Category: *Community-operated salmonid enhancement hatchery*

Travel south on the Island Highway until just past the Village Green Inn in Duncan. Turn left onto Boys Rd. (first corner after the bridge over the Cowichan river) and follow the road to the junction. Turn left and continue to the hatchery.

- 4. Evening Cove Oysters** (20 min.) Andrew Dryden Cell: 616-7882; Tel.: 245- 0949
Category: *Private Commercial Shellfish processing & grow-out farm*

Contact Andrew the **evening before** your field duties to find out where you will be working that day.

Farm site: Go south of Nanaimo past the airport and turn left onto Brenton-Page Road (Manana Lodge sign). Follow main road to the end, about 10 km, turn right onto Elliot Way and follow to the end of the road. Look for a house (green rancher) on left hand side (ocean side). Street address 11845 Elliot Way.

Processing plant: 1360 Stewart Ave, near Departure Bay ferry terminal

- 5. Little Qualicum Spawning Channel** (50 min) John Hargrove Tel.: 752-3231
Category: *Federal government salmonid enhancement hatchery*

Take Highway 19 north, bypassing Parksville. Exit at Qualicum Beach/Port Alberni exit. Follow Hwy. 4 and turn left onto Hwy. 19A (Hwy. 4 intersects with Hwy. 19A; Payless Gas Station is on the corner), follow it north past Shady Rest Pub and watch for sign on right. Turn left on Garrett Rd and follow to end of pavement. Follow Laburnum Rd over railway tracks. You are forced to go right (Claymore Rd). Cross over the single lane bridge (about 1.5 km down road) and look for facility sign. Follow gravel road (sign says no vehicle access beyond this point) to main building. Note: If the road is snow covered, use a four-wheel-drive vehicle only, or call ahead to be picked up at the highway.

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6. Malaspina University-College

Fisheries & Aquaculture Department

Frank Dalziel

Tel.: 740-6370

Category: *University education and research facility*

Find Frank or Gord at 9:00 a.m. in the hatchery area.

7. Mac's Oysters (40 min.)

John Foster

Tel.: 897-5149

Category: *Private commercial shellfish farm*

Follow Highway 19A bypassing Parksville. Turn right at the Denman Island ferry exit and continue to highway 1 (old highway). Turn right and the facility is on your left.

8. Mainstream Canada (1.25 hr)

Jack Edwards

Tel.: 723-4644

Category: *Private commercial salmonid facility*

Drive to Port Alberni and continue west towards Tofino (Highway 4) for approximately 14 km. Turn right onto Great Central Lake Road and follow past Robertson Creek Hatchery to end of Boot lagoon

9. Nanaimo River Hatchery (20 min.)

Henry Bob

Tel.: 245-7780

Category: *Nanaimo River Stewardship Society salmonid enhancement hatchery*

South of Nanaimo on the Island Highway, turn left just before the Cassidy Inn (approx. 10 km from Nanaimo), and follow the gravel road to the left. Park outside the gate.

10. Ocean Farms Hatchery (1 hr)

Jamie Bridge

Tel.: 748-2103

Category: *Private Commercial salmonid production hatchery*

Drive south on the Island Highway 1 km south of downtown Duncan. Turn left just after the Farmers' Market and then the first right (Corfield road). They are located at the end of the road (brown fence surrounds property). The address is 2654 Corfield Road.

11. Pacific Biological Station (20 min.)

Various site contacts

Category: *Federal government research facility*

Follow Departure Bay Road north along the bay. Turn right onto Hammond Bay Road, and watch for a sign on the right. Go through parking lot to far side of building. Park in visitors area, report to commissioner's office and ask for the appropriate contact.

12. Puntledge Hatchery (1.5 hrs)

Bryan Munroe

Tel.: 703-0909

Category: *Federal government salmonid enhancement hatchery*

Travel north on the Island Highway and take the first exit on the right for Courtenay. Turn left at the first light (Cumberland Rd.), then left onto Marsden Rd. Next, turn right onto

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Lake Trail Rd., then left onto Powerhouse Road. The hatchery (# 38 Powerhouse Rd) is about 2 km down the road.

13. Robertson Creek Hatchery (1.25 hr) Kevin Bilton Tel.: 724-6521
Category: *Federal government salmonid enhancement hatchery*

Drive to Port Alberni and continue west towards Tofino (Highway 4) for approximately 14 km. Turn right onto Great Central Lake Road, and watch for hatchery sign on the right.

14. Sea Springs Hatchery (45 min.) Peter Griffiths Tel.: 246-9191
Category: *Private commercial salmonid production hatchery*

Travel south on the Island Highway to the Cowichan area. Watch for Red Rooster Cafe on right prior to a stop-lighted intersection. Turn right at the intersection onto Mt. Sicker Road. Enter unmarked driveway directly in front of you and follow it around to the hatchery.

15. Unique Sea Farms (25 min) Tony Harper Tel.: 722-2922
Category: *Private commercial marine microalgae culture facility*

Heading South on Parkway, take Cedar road exit (straight through lights) and drive for about 3.5 km. Turn right on McMillan road and then left at the variety store/gas bar. Drive along Holden-Corso Rd. for about 1.9 km and you will note that it diverges sharply to the right (FOLLOW SIGNS THAT SAY HOLDEN-CORSO RD on right). After another 1.3 km you will see a stop sign, again follow signs for Holden-Corso Rd. as it now turns right. Keep driving along Holden-Corso Rd. for about 2.2 km until you see a sign on the left, Pace Rd (a gravel road). Drive to the end of Pace Rd. (0.4 km) and you will be on Headland Rd and will see the entrance gate for Unique Sea Farms.

16. University of Victoria (2.0 hrs) TBD Tel.:
Category: *University teaching and research facility*

Travel south on Island Highway to Victoria. Turn left on to McKenzie St. and follow to the end of the road (ends at University of Victoria's door step). You can either park on Cedar hill cross road (3 hour free parking) or pay for parking (\$4.00/day). Once on campus, locate the Petch building and ask for Gerry.

17. Vancouver Island Hatchery (1 hr) Dan Hayward Tel.: 746-5180
Category: *Freshwater Fisheries Society of BC salmonid enhancement hatchery*

Follow Island Highway south to Duncan. Get in left hand lane and turn left onto Trunk Road (Chevron is on other side of road at corner of Trunk and Island Hwy.). Turn right onto Marchmont Road at the first set of traffic lights. Follow the signs to the hatchery.

6.0 FIELD TRIPS

Generally, transportation, meals and accommodation are the responsibility of the students. At various times, for specific courses, field trips will be arranged. It is the responsibility of the students to ensure their own safety and comfort by arranging for and providing the necessary personal clothing and field equipment.

6.1 Costs

Generally, all costs for the field trips are born by the student. By use of the "Aquaculture Student Society," fund raising events can be useful in defraying major trips and events.

7.0 MISCELLENEOUS COURSES

7.1 *Swift water rescue*

Swift water rescue is now mandatory for D.F.O. field workers. It is quite expensive (> \$550) but is well worth your time if you plan to work with either the federal or provincial governments. For those interested, contact Darren Hebert (NREP).

7.2 *Small Boat Handling*

Students are encouraged to have a small boat-handling course. In 2007, it will be mandatory for every person operating any powered craft to be certified in small boat handling. A course may be offered to students sometime during the spring semester.

7.3 *Electrofishing*

It is the intention of the program to include background information on electrofishing safety, and an opportunity will be available for certification during the spring semester. If you plan to work in the fisheries field, having electrofishing certification is generally required. For further information, contact Darren Hebert.

7.4 *First Aid*

Occupational First Aid (WCB - Level 1) and transportation endorsement are mandatory parts of the program and will be provided as part of the program for an **additional** cost of \$140.00 (\$65.00 for first aid and \$75.00 for transportation endorsement). Students should also consider expanding this with further emergency aid training including wilderness first aid or WCB level 2 first aid.

Note: Effective January 1, 1994, in addition to Occupational First Aid (Level 1), a "Transportation Endorsement" is required if your work site is greater than 20 minutes from a hospital.

7.5 Laboratory Safety (including WHMIS)

You will be required to complete a laboratory safety training session, which will be arranged during the second week of classes. **Note: Absolutely no food, drink or smoking in ANY of the laboratories!** These areas include but are not limited to rooms 100 and 103 in Bldg. 380, Farms 1 & 2 in Bldg. 375 and, Bldg. 391 (greenhouse)

7.6 Small Engines

This course is no longer a require component of the program. It was, however, considered by some graduates to be extremely valuable - from a survival viewpoint in the industry. This course is still offered at Malaspina so, if you are interested in taking it in addition to your regular workload, you should contact John Morgan (RMOT chair).

7.7 Summer Practicum

Completion of this course requires the student to orally present his/her work experience along with a summary report. The report (10-14 pages in length) and oral presentation are part of the program (time and location for both to be discussed). For additional information about format, etc., contact Mark Noyon.

The summer work site must be either Fisheries or Aquaculture related if the student wants to complete the course requirements and, receive their diploma or degree. Six semester diploma students can either complete the summer practicum between their first and second year or, between second and third year of in the program; Four semester diploma students normally complete their summer practicum between first and second year of the program; Two semester diploma students, complete it after their year of study; degree students can complete it between second and third year or, third and fourth year. If a student does not get Fisheries or Aquaculture related work during the summer period, the oral presentation and the report will be deferred until after their first four months of work experience (after course completion), on consultation with the Field Coordinator.

Note: If you are in doubt whether your summer job will be an acceptable practicum, contact the field coordinator before the spring semester ends.

8.0 CREDITS FOR GRADUATION

Currently, 68 credits are required for graduation from the diploma program and 126 credits from the degree program (refer to our website for updates). Note: The summer practicum is a program requirement, and graduating requires a passing grade in all courses.

8.1 *Advanced Credit*

It is possible to "challenge" courses based on previous background or to receive credit for work done at other institutes. The challenge may take the form of a project, exam or interview at the discretion of the instructor of the course in question.

If advanced credit is granted, the student must take a form, signed by the instructor, to the Registrar so that the credit will be shown on the transcript. It is the student's responsibility that credits be accounted for and cleared with Registration. This is especially important for one-year students: acceptance in the program does not mean your advanced credits are recorded by Registration.

8.2 *Graduation Requirements*

Before a diploma can be issued, all courses must be satisfactorily completed. In the past, outstanding essays and projects have often delayed and prevented graduation. Unless otherwise arranged, students have only three months after their expected graduation to complete all requirements. After this time, an "F" grade will automatically be assigned and students will be required to re-register, pay for the course or courses and, complete all of the course requirements.

Note 1: The grace period only applies to AQUA and FISH courses; most of the other departments will not be so lenient.

Note 2: Generally, students are prevented from receiving their diploma or degree due to the incomplete summer practicum. Many students have completed the work component but failed to present orally and, submit a write-up. Remember: In order to work in many countries, you must have a post-secondary diploma or degree.

9.0 MISCELLANEOUS

9.1 Security

This is everyone's responsibility. Stock, stores and equipment are at risk in the Department, and every effort must be made to prevent losses. The basic common sense rules are i) to close and lock doors and gates during off hours (even if you're only away for "a minute") and, ii) to be vigilant about not leaving equipment in unsecured areas (especially outside). Note that whenever you use your access card, it is permanently logged into the computer system with the date and time. Therefore, if you fail to lock a door or, leave it opened for someone else, the responsibility is on you to make certain that the door is secured. If something disappears from that room, the last person that logged into that room is **held responsible**. Frank Dalziel will provide security cards and keys to students as required. If you need access, see Frank. NB. Keys must be returned to Frank Dalziel when classes are completed. Transcripts will be withheld until such keys are surrendered.

9.2 *Parking*

The main parking lots are for students. If your vehicle is parked in the faculty area, in or around the hatchery and offices or, along the fire road, it will be removed **at your expense**. It is strongly recommended that you purchase a parking pass (the student rate is \$37.50 for 8 months). Otherwise, you can expect to pay \$2.00 per day.

9.3 *Student/Staff areas*

All public areas (including the coffee/lunch room) must remain clean. This means that if you make a mess, you are required and expected to clean it up. Every year, dirty dishes accumulate in the lunchroom sink, in the lecture rooms and, in the labs. As stated earlier, no food or drink must enter any lab facility. If you enter a lab with either food or drink, you will be asked to leave it outside. If dirty dishes are left around (in the sink, lunch room or any lecture room), they will be washed and dried by a technician and stored away leaving nothing for you or your colleagues.

10.0 FISHERIES AND AQUACULTURE MEMBERS

10.1 Faculty/Staff

10.1.1 Fisheries and Aquaculture Program (www.mala.ca/fisheries)

Faculty member	Title
Don Furnell, Ph.D.	Chair / Instructor / B.Sc. Advisor
Duane Barker, Ph.D.	Instructor / Field Practicum Coordinator
Anne McCarthy, B.Sc.	Technologist
Frank Dalziel, Tech. Dip.	Technologist / Hatchery Manager
Jenny Dawson-Coates, B.Sc.	Technologist (on leave 2007-2008)
Stefanie Duff, Ph.D.	Instructor / Field Practicum Coordinator
Gordon Edmondson, Tech. Dip.	Instructor / Technologist
Chris Foote, Ph.D.	Instructor
Mark Noyon, M.A.Sc.	Instructor / Project Coordinator
Erick Demers, Ph.D.	Instructor (Biology & F&A)
Erick Groot, Ph.D.	Instructor (Biology & F&A)

contact information:

Faculty members	Local	Email address
Don Furnell, Ph.D.	2467	furnelld@mala.ca
Duane Barker, Ph.D.	2296	barkerd@mala.ca
Penny Barnes, Ph.D.	6302	barnesp@mala.ca
Anne McCarthy, B.Sc.	2100	mccarthy@mala.ca
Frank Dalziel, Tech. Dip.	6370	dalzielf@mala.ca
Jenny Dawson-Coates, B.Sc.	On leave	coates@mala.ca
Stefanie Duff, Ph.D.	2074	duffs@mala.ca
Gordon Edmondson, Tech. Dip.	2613	edmond@mala.ca
Chris Foote, Ph.D.	2406	footec@mala.ca
Mark Noyon, M.A.Sc.	6371	noyonm@mala.ca
Erick Demers, Ph.D.	2033	demerse@mala.ca
Erick Groot, Ph.D.	6365	groote@mala.ca

10.1.2 Natural Resources Extension Program (www.mala.ca/nrep)

	Local	Title
Darren Hebert, RPBio.	6377	Coordinator, Natural Resources Extension Program
Krista Convey, B.A.	6492	Program assistant

10.2 Research Areas

10.2.1 Centre for Shellfish Research (www.csr.mala.bc.ca)

	Local	Title
Don Tillapaugh, M.Sc.	6113	Director
Penny Barnes, Ph.D.	6302	Research Scientist
Koren Bear, B.Sc.	6537	Training Manager
Edith Billington, Tech. Dip.	2477	Algologist
Brian Kingzett, M.Sc.	6399	Deep Bay Field Station Manager
Stephanie Richards	6398	Coordinator, Projects & Contracts
Ruth Salmon, B.H.E.	6183	Communication Manager
Simon Yuan, M.Sc.	6359	Technician
Greg Bromle, M.Sc., M.BA	6569	Regional Training Coordinator
Wenshan Liu, Ph.D.	6558	Post Doctoral Fellow
Hellen Gurney-Smith, Ph.D.	6381	Research Manager, Shellfish Health and Husbandry Research Program
Soleil Switzer, B.Sc.	6349	Project Worker
Bill Pennell, Ph.D.	6347	Honorary Research Associate

10.2.2 National Research Council of Canada (www.nrc-cnrc.gc.ca)

	Local	Title
Warren Nagata, Ph.D.	2348	Industry Technology Advisor

10.2.3 Research Associates

Dick Beamish, Ph.D.	Bill Bennett, M.Sc.
Kees Groot, Ph.D.	Gordon Hartman, Ph.D.
Dave Lane, Ph.D.	Bill Pennell, Ph.D.

Student Project Report Outline (190/290/390 Series)

A. Field Notes: All students will keep individual project notebooks, which include the following.

1. Dates and times of work on project. Under the day and time, include standard data (water temp., weather, other people present). Time at start and at end.
2. Work done. Brief account of activities (e.g., mixed new algae nutrient, transferred TX culture to carboys, etc.). Comments on anything notable or unusual.

The notebook should be written in pencil or waterproof ink. Nothing should be erased (draw a line through a mistaken entry). Entries should be very legible. There should be a table of contents and clear labels (e.g., dates, topics). This is a record for future troubleshooting.

These project notebooks must be turned in at the end of the fall semester for grading.

- B. Most projects also include a Group Data Book. For example, the trout project members fill out forms on egg takes, egg survival, treatments, etc. The algae project members maintain a central record book, which documents all algal cultures, and inventory of species and cultures on hand.
- C. Annual Report. This report is due at the end of the spring semester and should be done by each student. It should be a summary of the project with emphasis on the student's actual activities in the project. It must be typed and take the form of a data report. Following is a suggested form for the report.
1. Abstract
 2. Introduction (essence of the project in general, role of the student, value of the activities).
 3. Materials and methods (what was done, where, and how? This is likely to be the longest section. For example, Chase River in the fall would include escapement counts with tagging methods, number of days on river, and brood stock capture through egg take.)
 4. Results (using the above example, number of fish tagged and escapement estimate, number of brood stock captured, and number of eggs taken).
 5. Discussion (which includes evaluation of results, sources of error, problems encountered, and suggestions for improvements).
 6. References (not a bibliography, but should include critical references used in the work. Escapement estimate papers, fish culture handbooks, as in above examples.)

Some projects may include special student studies, or experiments such as the shrimp or urchin rearing, done this year as a part of the algae project. These could be written up using this format, and might also include a literature review.