

Ph.D. Fisheries Science Comprehensive Examination Guidelines

Fisheries and Marine Institute, Memorial University of Newfoundland

Version 2.0

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SOF Academic Advisory Committee

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Purpose of this document

This document contains the policies, procedures, and regulations surrounding comprehensive examinations for Ph.D. students in the Ph.D. Fisheries Science program at the Fisheries and Marine Institute of Memorial University of Newfoundland.

These regulations are in addition to the School of Graduate Studies general regulations for comprehensive examinations: <http://www.mun.ca/regoff/calendar/sectionNo=GRAD-0024> and, if conflict exists, the SGS regulations take precedence.

Acknowledgments

The original version of this document was originally prepared by Dr. Brett Favaro, former Academic Director of the Fisheries Science Graduate Program. The current regulations were built after review of the examination procedures of other departments. We particularly acknowledge the Department of Biology for clearly and extensively documenting their examination procedures. Many of the elements of our procedures were inspired by, or directly borrowed, from their regulations.

Background: Comprehensive Examinations

The Ph.D. is the highest academic degree one can receive in most countries. To get one, an individual has to demonstrate that they are not only extremely qualified in area of study, but are also able to place that research into a broader context, and understand the role their work will play in advancing knowledge. Ph.D. students demonstrate their achievement of this level of expertise through their dissertation and defense – but also through an intermediate step known as a “comprehensive exam”.

The comprehensive examination is an activity that typically takes place in the first half of a student’s program of study, and that serves to assess the knowledge that a Ph.D. student has gained to date. Just as importantly, it serves to determine whether the student has the capability to complete a high enough quality research program to warrant receiving a Ph.D. The vast majority of Ph.D. programs include a comprehensive exam, and they are sometimes referred to as a “candidacy exam” or “qualifying exam”.

The comprehensive exam is not to be taken lightly. It is a significant step in the graduate program, and must be passed in order to remain enrolled. Once a *Ph.D. student* passes the comprehensive examination, the student becomes a *Ph.D. candidate*. In this guidebook, we describe how comprehensive exams proceed in the Marine Institute School of Fisheries (SOF) Ph.D. program.

The structure for the comprehensive examination in the Graduate Program in Fisheries Science was revised in the winter 2021 by the Academic Advisory Committee following discussions and feedback received from students and faculty in the program. In contrast to the previous version, the revised comprehensive examination does not address the student’s thesis proposal but focuses on an assigned question within a sub-discipline and within the broader discipline of Fisheries Science.

The assigned subject may be linked to the student’s thesis research but is **not** a project proposal and should be different to the thesis research question. Indeed, one of the purposes of the comprehensive examination is to extend the student breath of knowledge.

The comprehensive examination is composed of three parts: the written examination, the oral presentation and the question and answers. **The oral presentation and Q&A are open to the public.** The written examination will be available only to the examination committee.

Examination Components

1. *Written examination (40% of grade)*

The student must produce a written paper, in the format of a literature review or essay, on a subject assigned by their examination committee. In this paper, the student must demonstrate an ability to synthesize information. Students must demonstrate a comprehensive understanding of the assigned subject, including knowledge gaps and research priorities, and how the subject fits within the sub-discipline (page 4) and within the broader discipline of fisheries science.

The examination committee may require that the student read specific scientific papers or books, and demonstrate understanding of those sources by incorporating information from them into the written paper.

The paper should be formatted as follows:

- 1-inch margins
- Double-spaced
- Times New Roman font, size 12
- 22 pages **maximum**
- References in the format of the Canadian Journal of Fisheries and Aquatic Sciences (<http://www.nrcresearchpress.com/page/cjfas/authors#9d>)
- Additional pages including references, tables, and figures should be included as needed, and will not count towards the 22 page limit
- Must include a <= 200 word abstract on the first page.

The paper will be graded according to a rubric (see page 8). Any additional pages beyond 22 will be discarded. Each examiner will render a grade, and will issue a vote on whether to proceed to the oral examination. See the Evaluation section for information on how this decision is made.

2. *Oral presentation (20% of grade)*

After the student passes the written examination, the student will proceed to the oral examination. The oral examination consists of an oral presentation and Q&A. For the oral the Ph.D. student will produce a presentation (20 to 30 minutes in length) supplemented by a slide deck on the assigned topics. It is expected that students make effective use of visuals during their oral presentation, including using and interpreting figures and data to articulate scientific concepts. During the presentation, the student needs to provide a brief introduction of the topics followed by an in-depth review of the key concepts and conclude with a synthesis that includes identified knowledge gaps and research priorities. The oral presentation will be graded by the rubric on page 9.

3. *Question and answers (40% of grade)*

The oral presentation will be followed by an extensive question and answer period. The candidate will be questioned by each voting examiner (and the Department Head or Delegate, if they choose to do so). Each examiner will get up to 15 minutes to ask questions per round, and there will be two rounds of questions. Questions can address the assigned topic, the student

subdiscipline, and more broadly the field fisheries science. If the comprehensive examination is conducted in person, a white board or chalkboard should be present in the examination room, so that the student can draw graphs to help explain concepts that arise during questioning. The Q&A will be graded as per the rubric on page 10.

Examination Committee

The composition of the examination committee will be as follows (all members are voting members unless otherwise specified)

- Exam committee chair: Head of the academic unit (or delegate)
- Student's supervisor
- Three other members

Aside from the senior supervisor, members of the student's supervisory committee normally may not serve on the examination committee (the only exception is in cases where no other local, qualified examiners are available, with the consent of the Graduate Officer). In cases where students have a co-supervisory arrangement, the co-supervisor may serve as one of the "three other members."

Topic selection and subdiscipline

The student's written subject will be decided by the examination committee. The subject should relate broadly to the student's area of research but be broad enough so as to force the student to engage both deeply and widely with scientific literature on the subject.

The written subject will fit within a subdiscipline, which may include (but not restricted to):

- 1) Stock assessment
- 2) Quantitative methods in fisheries science
- 3) Fisheries technology
- 4) Post-harvest processing and biotechnology
- 5) Fisheries policy and practice
- 6) Fisheries ecology

Within that general field, the student will be tasked with addressing a specific subject. But it is critical that the student demonstrate a breadth of knowledge that they can discuss their research subject within the context of academic literature. We encourage examination committees to select subjects that require students to place their work in the context of the ecology, management, and practice of fisheries that may be impacted by their work. The student will not have input into selecting their subject.

The student must be notified of its sub-discipline at least three months before the start of the comprehensive examination process. A written proof of notification must be attached with the completed "Recommendation for PhD Comprehensive Examination" form.

Evaluation

Deliberation and final grading

After the completion of the question and answer period, the candidate and all spectators will be asked to leave the room, and the committee will deliberate *in camera* to discuss evaluations and arrive at a consensus. The student will be informed of the result after deliberation, and completed rubrics from each voting examination committee member will be provided to the student. The marks on the rubrics will not be shared with the student because the purpose of sharing rubrics is mostly to provide feedback and not grade to the student.

Outcomes

As per SGS regulations, the possible outcomes of a comprehensive examination are:

- Pass
- Pass with conditions (The committee may require the student to, for example, take an additional course, but no re-examination is required)
- Re-examination
- Fail

We advise examiners to follow the process below in determining their vote.

Written examination: Each examiner will assign a numerical grade to the student based on the rubric (Page 8). If the examiner awards a grade of $> 65\%$ **in every assessment category**, they shall vote “yes” to allow the student to proceed to the oral examination. A simple majority result is needed to proceed to the oral examination.

If an examiner assigns a score below 65% in any one category of the rubric, they shall vote to require a re-examination (if it is the first examination). If the examiner assigns a score below 65% in more than one category, they may vote for re-examination, or may vote for the student to fail outright.

A failure can only be awarded on the first attempt if all examiners are unanimous in this opinion. If even one member votes otherwise, the student is given the opportunity to re-examine.

Only one re-examination is permitted. If the examination is not satisfactory on the second attempt, the student fails and their program is terminated.

In all cases, each examiner’s completed rubric will be made available to the student, and will be included in their file.

Oral examination: Each examiner will assign a numerical grade to the student as per the rubric for the oral presentation (Page 9), and the Q&A (Page 10).

Examiners will total up their grades across all examination components and render a vote on the outcome of the overall comprehensive examination. A simple majority of ‘passing’ votes is needed for the student to pass the examination.

Examiners awarding a grade $\geq 65\%$ in every component (and therefore, $\geq 65\%$ overall) should vote for the student to either 'pass,' or receive a 'pass with conditions.' However, a 'pass with conditions,' from a voting perspective, is still a passing vote.

If a student receives $< 65\%$ for **any component** of the oral examination – even if their overall summed grade is a pass – the examiner may either vote for re-examination for the oral component only (which would include a project proposal, an oral examination, and a Q&A period), or vote for the student to fail overall (for a student to fail without opportunity to re-examine, the exam committee must unanimously vote 'fail'). Only one re-examination is permitted – if the student fails the re-examination, they are terminated from the program.

Completed rubrics can be provided to the student (without the marks), and included in their file.

Conditions: Examiners may vote to pass the student with conditions, meaning the student must complete certain conditions after the conclusion of the examination. These conditions may include, for example, taking an additional specified course, or conducting a short literature review on a specific topic. The examination committee should determine conditions by consensus, and if a consensus cannot be reached, then the student receives a simple pass. Examiners may nevertheless make non-binding recommendations to the student.

Regulations and Timeline - *Where, when, who, and how?*

Timeline

The examination must occur before the end of the 7th semester of enrollment, but students should aim to complete it sooner. The 4th or 5th semester is ideal. All required courses must be successfully completed prior to the comprehensive exam taking place.

Checklist

Action	Occurs within __ weeks of previous step:
<input type="checkbox"/> Supervisor writes an email to their student informing them of a pending comprehensive examination, as well as a sub-discipline within which the examination topics fits (examples on page 4)	3 months before start of process
<input type="checkbox"/> Supervisory Committee recommends examiners to AAC	0
<input type="checkbox"/> AAC approves examiners, makes recommendation to Dean of Graduate Studies	1
<input type="checkbox"/> Dean of Graduate Studies appoints examiners	(as long as needed)
<input type="checkbox"/> Examination committee formed, recommends topic for written examination, and declares paper due date and date of oral examination*	2
<input type="checkbox"/> AAC approves written paper topic, Graduate Officer notifies candidate	1
<input type="checkbox"/> Candidate submits completed written examination to graduate secretary	6
<input type="checkbox"/> Graduate secretary forwards examination to examination committee	0
<input type="checkbox"/> Examination committee grades written examination. Based on grades, the committee either recommends or does not recommend that the oral examination proceed	2
<input type="checkbox"/> Student prepares written component of the oral presentation, and submits to examination committee	2 (this should be done while the examination committee grades written examination)
<input type="checkbox"/> Oral examination proceeds	1

*The date of the oral examination should be scheduled around three weeks after the due date of the written paper, so as to allow for the timeline to proceed as written, but also to limit time between oral and written examination. Normally, these dates are determined by the examination committee first articulating a target date for the oral presentation, and then working backward to determine other due dates.

See also Figure 1, on page 12

Rubric: Written Examination

Written Examination Total Grade: /40	Notes:
<p>Body /25</p> <p>Abstract</p> <ul style="list-style-type: none"> - Abstract is high quality and provides an accurate summary of the paper <p>Introduction</p> <ul style="list-style-type: none"> - Research topic is clearly articulated - Ample background provided - Key concepts and theories well explained <p>Body</p> <ul style="list-style-type: none"> - Key citations from critical literature are included, and the findings from those papers are accurately described and contextualized - Evidence of advanced thought is demonstrated. Paper is not a list – it is a synthesis - Any figures and tables are clear and well-used - Arguments are well-supported by evidence and primary literature 	
<p>Presentation and Writing /10</p> <ul style="list-style-type: none"> - Paper is coherently written, with good spelling and grammar - Arguments are easy to follow - Sub-headings are logical, and paper is well-organized 	
<p>Formatting and Compliance /5</p> <ul style="list-style-type: none"> - Citations formatted correctly - Complies with rules (max 22 pages (not including references, figures, or tables), 12 point Times New Roman font, double spaced, one-inch margins)* <p>*Any pages beyond 22 will be discarded, and one mark will be deducted for every page above 22.</p>	

Examiner (Please print): _____

Date: _____

Does the student have >65% in all sections (Y/N)? _____ (If Y, vote to proceed is “Yes”)

If no, please indicate vote to proceed with oral, re-examine, or fail: _____

Rubric: Oral Presentation

Oral Presentation - Total Grade: /20	Notes:
<p>Content /10</p> <ul style="list-style-type: none"> - Research topic is clearly articulated and placed in the context of scientific literature - Presentation discusses key concepts and theories - Content is accurate and well-synthesized 	
<p>Organization, Delivery, and Style /8</p> <ul style="list-style-type: none"> - Visual aids support the delivery - Text is large and readable. Figures are clear and high-quality - Talk is well-organized, and language and jargon are appropriate for an audience with generalist fisheries science knowledge - Talk is delivered articulately and clearly 	
<p>Formatting and Compliance /2</p> <ul style="list-style-type: none"> - Talk does not exceed 30 minutes in length - Talk includes slides 	

Examiner (Please print): _____

Date: _____

Rubric: Question and Answers

Question and Answer - Total Grade: /40	Notes:
<p>Content /30</p> <ul style="list-style-type: none"> - Demonstrates understanding of theory and concepts necessary to answer questions - Invokes relevant scientific literature in responses - Communicates answers, when needed, with multiple media (e.g. able to draw basic graphs on a chalkboard or whiteboard to explain concepts) - Acknowledges limits of knowledge, but does not dismiss them or attempt to cover up misunderstandings – does not dodge questions 	
<p>Organization, Delivery, and Style /10</p> <ul style="list-style-type: none"> - Answers questions clearly, completely, and articulately - Demonstrates active listening – asks clarifying questions as needed, engages in detail with examiners questions - Engages constructively with questions, rather than defensively 	

Examiner (Please print): _____

Date: _____

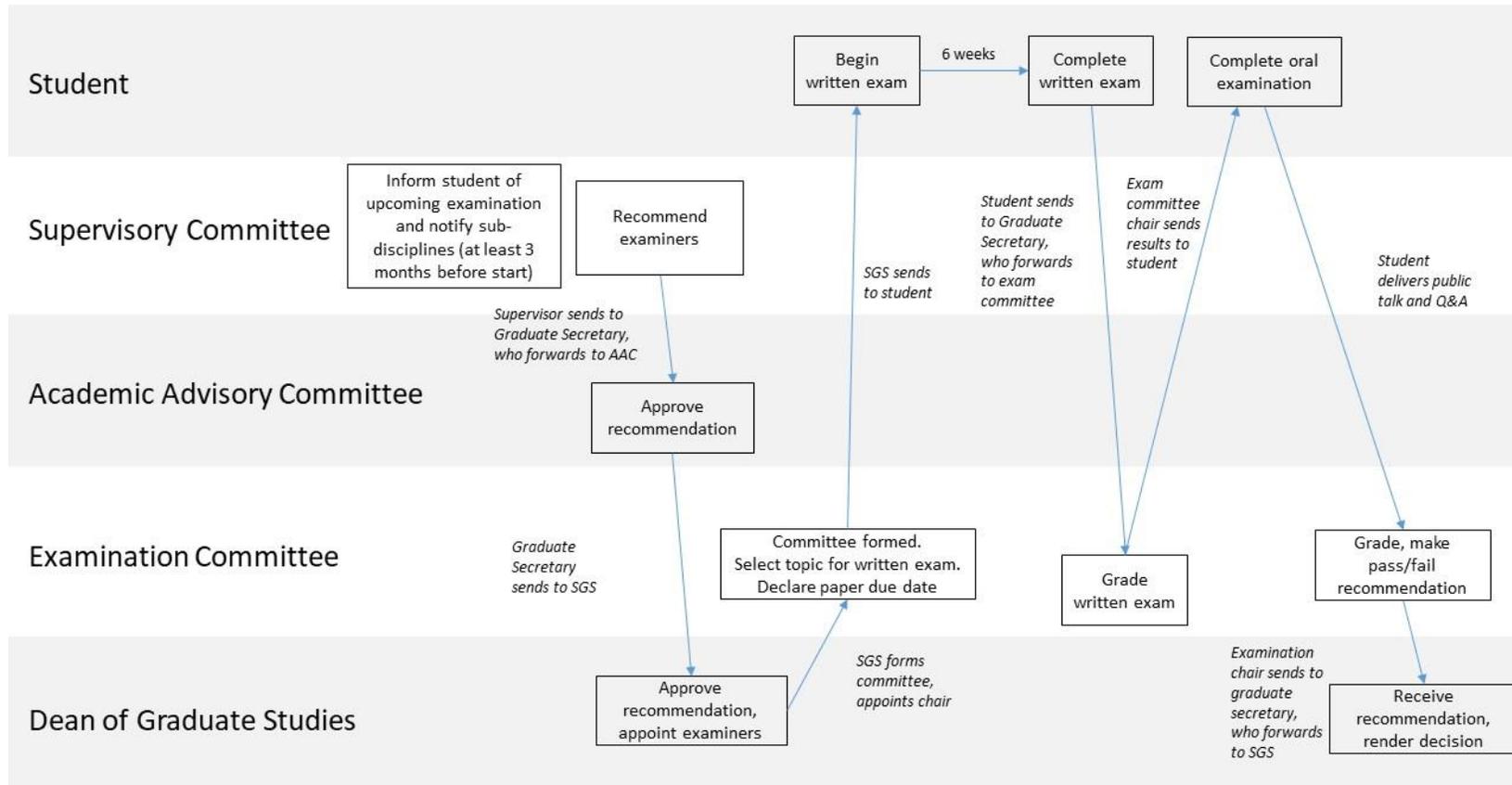


Figure 1: Examination flowchart, demonstrating key examination steps and the chain of custody of the examination file.