

**Recommendation #1****Document for Approval – Motion to approve the Masters of Medical Studies Program Proposal****MOTION:**

**Moved that the Masters of Medical Studies Program Proposal be approved for submission to the Senates.**

**PROPONENT(S)**

Graduate Studies Committee

Dr. David MacLean (Chair)

Dr. David Marsh

Dr. Mark Thibert

Dr. Marina Ulanova

Mr. Robert Barnett

Dr. Penny Moody-Corbett

Dr. Sheldon Tobe

Dr. TC Tai

Dr. Erin Cameron

**REQUESTED ACTION**

The committee is being asked to approve the Masters of Medical Studies (MMS) Program Proposal.

The MMS program has been developed by the Graduate Studies Committee (GSC) with input from:

Dr. David Lesbarreres, Dean of Graduate Studies, Laurentian University,

Dr. Chander Shahi, Dean of Graduate Studies, Lakehead

Dr. Nancy Luckai, Deputy Provost, Lakehead University

Dr. Moira McPherson, Provost and VP (Academic), Lakehead University

Dr. Serge Demers, Interim Vice President, Academic and Provost, Laurentian University

The MMS program proposal has also been reviewed by two external reviewers; Dr. James Rourke, Professor of Family Medicine, Director, Centre for Rural Health Studies, Memorial University and Dr. David Snadden, Rural Doctors' UBC Chair in Rural Health, Department of Family Practice, UBC on during an external site visit to Thunder Bay on Sept 18-19, 2017. The external review was extremely positive, and their report has been attached to this submission. The MMS Program Proposal has been revised in accordance with the suggestions of the external reviewers and a summary of these revisions has also been attached to this submission.

The final revised version of the MMS Program Proposal has been reviewed by the individual listed above and approved by the GSC.

**ROUTING AND PERSONS CONSULTED**

Progress	Body	Date	Approval	Recommendation/Information
Completed	GSC	Nov 1, 2017	Yes	Submit to Academic Council – Approved on December 7, 2017
Completed	JSC	December 18, 2017	Yes	Submit to Senates
In progress	Senates	<i>For Next meeting</i>		

**NEXT STEPS**

Following approval at Academic Council (December 7) the MMS Program Proposal will be submitted to the Joint Senate Committee for their approval. Once the approval has been obtained at the JSC, the MMS Program Proposal will be submitted to the Senates of both Universities for their approval.

**SUPPORTING MATERIALS**

- 1) MMS Program Proposal
- 2) External Reviewers Final Report
- 3) Summary of Revisions made to the MMS Program Proposal based on the External Reviewers Report

October 26, 2017

## **Master of Medical Studies (MMS)**

**Northern Ontario School of Medicine  
Office of Research  
935 Ramsey Lake Rd  
Sudbury Ontario P3E 2C6  
955 Oliver Road  
Thunder Bay Ontario P7B 5E1**

**October 2017**

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## **I. Objectives**

### **A. Background and Rationale**

The Northern Ontario School of Medicine (NOSM) serves as the Faculty of Medicine for Laurentian University in Sudbury and Lakehead University in Thunder Bay. The Master of Medical Studies (MMS) program will be a joint degree program of the two Universities offered by NOSM and the MMS graduates, like NOSM's medical undergraduates, will receive a joint degree from both Lakehead and Laurentian Universities. The purpose of creating the MMS program is to provide an avenue for physicians, already in practice, to learn and develop the knowledge and skills necessary to be successful clinical researchers. The Master's program will provide foundational knowledge on skills required to be successful researchers, competitive and successful in acquiring grant funding to support research, and leaders in teaching and other academic pursuits.

A major goal of NOSM's MMS is to train clinician researchers, in particular physicians in Northern Ontario. There is clearly a need for medical schools to offer programs to provide physicians with the skills required to become qualified clinician researchers. Accreditation standards for undergraduate medical education, postgraduate training and continuing professional development all include reference to research and scholarly activity as important components in medical practice in Canada. While all other medical schools in Canada train Masters and Doctoral students, according to the Association of Faculties of Medicine of Canada (AFMC), there has been a plateau in the number of clinicians trained as research scientists. Hence, there is clearly a need for medical schools to offer programs to provide physicians with the skills needed to become qualified clinician researchers. The MMS is specifically designed with a focus on clinician scientists who work primarily in rural or remote regions and ask research questions unique to these environments. NOSM is the only medical school in Canada that was founded on a social accountability mandate, which is to be responsive to the health care needs of the communities of the north with a focus on improving people's health. The MMS program, like the other programs of NOSM, will work closely with Community Engagement portfolio, including the offices of Indigenous Affairs and Francophone Affairs and the Indigenous and Francophone Reference Groups to ensure the graduate program engages with all aspects of communities to encourage their input on graduate activities including research and scholarly activity.

The MMS proposed by NOSM is specifically designed to meet these needs and provide an opportunity for NOSM's clinical faculty to engage in impactful research. A key component of this program is that it is targeted at NOSM's 1400 clinical faculty members who provide clinical leadership throughout all of Northern Ontario and who are also eager to pursue research, but lack formal training. The MMS graduate program will be delivered using NOSM's unique Distributed Community Engaged Learning (DCEL) model, which has been successfully offered at NOSM for over ten years. NOSM is ideally positioned to offer graduate training for clinicians that will provide them with the skills necessary to engage in socially accountable, community engaged research.

## **B. Consistency of the program with the Institutions' missions and academic plans**

NOSM, in its 2015-2020 strategic plan, is dedicated to strengthening research capacity and increasing clinical research in the north. In an effort to assist with achieving this goal, the MMS program will provide students with the skill set to conduct high quality, independent research. Of the five strategic goals, in the Strategic Plan, two are directly related to the proposed MMS program: Enrich Education Programs and Strengthen Research Capacity.

The MMS program will also align with the mission, goals and academic plans of Laurentian and Lakehead Universities. Medicine is recognized as a major discipline for both Universities including being recognized in both the Laurentian Strategic Plan (2012-2017) and Lakehead Strategic Plan (2013-2018). The MMS program will enhance the Universities' overall mission of rural and northern health by increasing the research capacity of clinicians in particular in rural and remote areas of Northern Ontario. In addition, the unique DCEL model recognizes and incorporates the community in the learning environment and serves to enhance community engagement, which is a priority area at both host Universities. The MMS program will complement existing graduate programs at both Universities by specifically addressing the need for advanced research training for MDs practicing in Northern Ontario and will "expand research, scholarly, and creative activity" (Lakehead University Strategic Plan 2013-2018) and focus on "healthy communities through professional health programs, including the Northern Ontario School of Medicine" (Laurentian University Strategic Plan 2012-2017).

## **C. Program Demand**

Description of the MMS was part of the strategic planning exercise of 2015, which included meetings with over 1000 stakeholders including community members, health care professionals and clinical faculty members in over 50 communities. Of the five strategic goals for 2015-2020, two are directly related to the proposed MMS program: Enrich Education Programs and Strengthen Research Capacity. Further interest of graduate training for clinical faculty has been sought through face-to-face meetings with the Associate Dean, Research, and members of the Local Education Groups (LEGs<sup>1</sup>) distributed across Northern Ontario, and at the annual LEGs meeting. These meetings held over the past three years have demonstrated a desire by clinical faculty to have more structured learning opportunity, in the form of graduate training that takes into consideration the specific needs of practicing clinicians. As such, the design of the MMS program is based on the DCEL model. In addition, clinical faculty members attending NOSM's annual Northern Constellations meeting, which is a face-to-face meeting providing professional development and continuing medical education opportunities, have indicated a desire to have more formal training on various aspects of conducting research. Research sessions, currently offered at Northern Constellations, are always well attended and taken together with the community need for research in key areas of health and wellness, underscore the need for a program that trains clinical researchers.

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<sup>1</sup> There over 45 LEGs throughout Northern Ontario and include clinical faculty who have joined together to assume responsibility for identifiable components of the NOSM academic mandate (<http://localeducationgroups.ca>).

#### **D. Degree Nomenclature**

The name of this Master's program is Master of Medical Studies (MMS). The title of the program was selected to reflect the level of academic achievement of the entry level student (that is, undergraduate degree in the MD or equivalent) as well as the specific interest of this program to provide graduates with the skills to evaluate and conduct clinical research while in clinical practice. The program-specific learner outcomes, course-specific learner outcomes and degree level expectations describe the expectations of the graduates from this program and relate specifically to the title of the program Master of Medical Studies. The title was also selected to specifically indicate the association of this program with the School of Medicine. The Master of Medical Studies is unique terminology not used elsewhere at NOSM or the two Universities, but will be well-recognized as a School of Medicine specific graduate program appropriate as a pre-requisite to Doctoral level studies in other Medical Schools.

#### **E. Program-Specific Learner Outcomes**

The objective of the MMS is to provide physicians currently in clinical practice sufficient knowledge of research to be able to identify the key elements that are required in order to conduct an independent research project and to apply these to conduct their own research project. The 17 specific program learner outcomes (PLOs) listed below are given as expectations for students upon completion of the MMS program.

The MMS program will provide an opportunity for students to interact with research faculty, clinician scientists and fellow students, enhancing the importance of networking and dialogue in both formal and informal settings.

PLOs: by the completion of the program students will:

1. Have an in-depth knowledge of their research topic.
2. Be able to develop research questions stemming from rural or remote practice.
3. Recognize research unique to the health of Indigenous and Francophone populations.
4. Understand the concept of social accountability as it pertains to research and the patient populations that the physician services.
5. Be able to undertake a critical appraisal of health research publications and apply this to their own work.
6. Understand translation of research results into practice.
7. Have an understanding of the social determinants of health, and their relationship to health status and health services in rural and remote communities.
8. Be able to identify the components that constitute a research project including designing a question that can be answered, applying appropriate methods to conduct the research plan, and collecting and analyzing data to final dissemination of research results.
9. Know the differences between qualitative and quantitative research design elements including methodologies and analysis and understanding the limitations of each.

10. Be able to apply appropriate statistical analysis to their own project and understand basic concepts of statistical analysis.
11. Gain expertise in writing in a variety of styles, including grants, essays and publication format.
12. Be able to clearly communicate research findings in both verbal and written form.
13. Understand the importance of culturally sensitive health data and information for Indigenous peoples.
14. Have a basic understanding of the health research funding environment in Canada.
15. Understand the governance models for oversight of research in particular as they relate to topics of ethics, integrity, and conflict of interest.
16. Have a basic understanding of educational and training models that support recruitment and retention of health providers in rural and remote communities.
17. Understand the importance of strong relationships within the inter-professional/interdisciplinary team in northern and rural practice.

## **II. Program Description and Course Map**

The MMS will be offered through full time or part-time studies and requires the completion of 18 credits including a research thesis. Graduate students in the program are required to take a minimum of two-thirds of the course requirements from among graduate level courses.

### **A. Admission Requirements**

The admission standards of the MMS program are equivalent to those of the Faculties of Graduate Studies at both Laurentian and Lakehead Universities. The MMS program will have its own admission requirements as noted below. The MMS program is specifically directed to training MDs and the expectation on admission is that students to the program will be knowledgeable in biomedical, clinical studies and community-based health common to all graduates with the degree of MD or equivalent. On the approval of the Post-Graduate Program Director, physicians currently enrolled in a NOSM post-graduate training program will also be eligible for admission to the MMS program.

#### General Requirements:

- Completion of an MD degree or equivalent professional degree

#### Specific Requirements:

- Completion of the online application form
- Curriculum Vitae
- 3 letters of Reference
- Personal Statement (not to exceed 500 words), including
  - Rationale for applying to the MMS program
  - Future application of the skills learned
  - Summary of previous research training if any
- Proposed Research (not to exceed 250 words)

- An overview of the proposed research area including rationale for the project, the proposed location and the name of the potential adviser
- All students must identify an supervisor from the approved list of available faculty prior to submission

Note: A critical component of successful graduate training is the identification of the appropriate thesis supervisor. Therefore, the NOSM Assistant Dean Graduate Studies will approve all thesis advisers and/or assist in identifying thesis adviser(s) based on the research area and available expertise.

## **B. Program Content**

The MMS is uniquely designed for students who are currently practicing medicine in Northern Ontario, but in exceptional cases will also consider students from other national or international jurisdictions. The focus of the research component of the MMS program is to conduct socially accountable, community engaged, and clinically relevant research. The courses for the MMS have been designed to specifically provide students with the knowledge and skills to conduct independent clinical research. Many of the courses contain content that incorporates the current state of the discipline, such as the courses in Independent Study/Advanced Topics, Bioethics and Research Integrity, Research Grant Writing and Critical Appraisal, and Special Topics in Rural and Remote Practice. The program is thesis based, including an independent research project designed to provide the students with real-world experience in conducting research. The metric of success will be to write and defend their thesis. Students will be encouraged to produce a manuscript and present at research conferences.

The program consists of 19.5 credits made up of a Research Thesis (MMS 5000, 9 credits), three required courses (MMS 5100, 5200 and 5300, 3 credits each) and a choice from three elective courses (MMS 5400, 5500 or 5600, 1.5 credits each). The program map is shown in Section G.

Non-credit requirement: Students will also be required to attend at least one face-to-face MMS Workshop per year, described in Section III, MMS Program Workshop.

## **C. Course Descriptions and Learning Objectives**

All of the course offerings for the MMS program, listed below, are designed as graduate level courses. No undergraduate courses will be considered for credit for the MMS; that is, 100% of the courses will be at the graduate level. The Course-specific learner outcomes and course assessment are summarized in Table 3 (Section V).

Courses are designated by credits such that a 3-credit course indicates the equivalent of 3 hours per week for a semester of 13 weeks. The MMS 5000 Research Thesis is the equivalent of three 3-credit courses; that is, 9 credits. Four courses (MMS 5300, MMS 5400, MMS 5500 and MMS



5600) are each 1.5-credit courses, being offered for example for 1.5 hours per week over 13 weeks. Mode of delivery is described in Section III.

### **MMS 5000 - Research Thesis (9 Credits)**

This course comprises the research thesis component of the MMS degree. The thesis will be written in either the traditional approach utilizing individual chapters or the more progressive approach as an expanded manuscript. The approach, which is taken, is decided by the student's thesis committee and takes into consideration the area of research interests. It is expected that each student will enroll concurrently in this course each semester that they are in the program either as a full time or part time student. Once the thesis is completed and successfully defended, then the total course credit of 9 will be awarded.

#### Course-specific Learner Outcomes:

- 1) Formulate a novel research question.
- 2) Apply the concept of socially accountable research to the selection of the research question.
- 3) Write a thesis with introduction, methodology, results, figures, tables, discussion and references.
- 4) Collect, analyze and interpret data.
- 5) Defend research work in an oral defense.

### **MMS 5100 - Introduction to Research in Medical Studies (3 credits, required)**

This is the foundational course for the MMS degree and it focuses on contemporary approaches in conducting research in medicine and the health care field. It includes topics such as: research design and experimentation, qualitative and quantitative methodology and analyses, bioethics, and the development of a research proposal. Upon completion of this course, students will be able to develop a research proposal and apply the appropriate qualitative or quantitative approach to data collection and analysis as it relates to health-based research.

#### Course-specific Learner Outcomes:

- 1) Knowledge of components that form a research study.
- 2) Knowledge of different research designs.
- 3) Knowledge of research terminology including purpose statement, research question, hypothesis, dependent and independent variables, translational research, etc.
- 4) Knowledge of quantitative and qualitative methodologies, data collection, statistical methods, and data analysis.
- 5) Knowledge of the predominant statistical methods used in clinical research.
- 6) Knowledge of "big data" and "administrative data" sets, how and when they are used in health research.
- 7) Knowledge of health data specific to rural, remote and underserved populations .
- 8) Knowledge of the steps associated with developing an independent study plan.

- 9) Ability to conduct in depth literature review.
- 10) Knowledge of steps used in critical appraisal.
- 11) Knowledge of principles of research integrity and ethics.

### **MMS 5200 - Independent Study/or Advanced Topics (3 Credits, required)**

This course is designed to introduce the student to topics of interest that are related to the student's proposed area of research. This course will allow the student to explore their area of interest at a greater depth and gain more specialized and specific knowledge, which will assist in designing and conducting their thesis research project. The topic will be agreed upon by the supervisor and student and must be related to their research area of interest. Upon completion of this course, the student will have a greater understanding of the selected area of research in order to develop their own research proposal and thesis topic.

#### Course-specific Learner Outcomes:

- 1) In depth knowledge of the topic area.
- 2) Ability to critically evaluate literature in the topic area and compare and contrast research related to the topic area.
- 3) Knowledge of the goals, aims and objectives of research in the topic area.

### **MMS 5300 – Bioethics and Research Integrity (3.0 Credits, required)**

This course is designed to provide the student with an in-depth understanding of topics in research bioethics and responsible conduct of research in areas of health and medicine, as they relate to research in rural, remote and marginalized communities. This course will include consideration of the moral, ethical and philosophical implications of health research and the principles of responsible conduct of research in the context of national and international standards.

#### Course-specific Learner Outcomes:

- 1) Knowledge of ethical issues related to the design, implementation, interpretation and dissemination of health research projects.
- 2) Basic understanding of research misconduct, conflict of interest and related topics.
- 3) Knowledge of the ethical considerations in human and animal research.
- 4) Knowledge of local, national and international governance structures for research ethics and integrity.
- 5) Knowledge of Indigenous peoples' experiences with research and researchers.
- 6) Knowledge of how research protocols and practices differs when research is conducted with Indigenous peoples and communities.
- 7) Basic understanding of informed consent.
- 8) Basic understanding of issues concerning privacy and confidentiality.
- 9) Knowledge of strategies to minimize risk in research.

### **MMS 5400 – Research Grant Writing (1.5 Credits, elective)**

This course introduces students to various aspects of grant writing and grant writing styles. The course focuses on the step-by-step processes involved in creating a competitive research grant proposal. The course also provides instruction on identifying health research funding opportunities from local, provincial, national and international agencies, including those unique to Northern Ontario. The course culminates in students developing and writing a grant proposal based on their chosen area of research interest and how the funding would support advancement of that field of study.

#### Course-specific Learner Outcomes:

- 1) Knowledge of regional, national and international funding opportunities.
- 2) Knowledge of the components of a grant proposal: summary, full proposal, figures, tables, budget, etc.
- 3) Ability to write a coherent grant proposal.
- 4) Ability to critique a grant proposal.
- 5) Basic understanding of steps involved in grant submission and post-grant administration.

### **MMS 5500 - Critical Appraisal of Research Reports (1.5 Credits, elective)**

This course will introduce students to methods for critically evaluating health research by focusing on critical appraisal of current and relevant health research publications, including clinical research. The course will include a systematic approach for evaluating the strengths, weaknesses and value of research reports and how to assess the usefulness and validity of the research findings. The students will also learn the skills necessary to evaluate various types of research methodologies with the aim of providing the students with the tools to guide their own critical analysis and evaluate their own written work.

#### Course-specific Learner Outcomes:

- 1) Ability to define critical appraisal.
- 2) Basic understanding of how to critically appraise a research article.
- 3) Ability to assess the findings as they relate to the proposed intent of a research study.
- 4) Ability to assess the generalizability of research results.
- 5) Ability to assess the relevance and impact of research findings.

### **MMS 5600 – Special Topics in Rural and Remote Practice (1.5 Credits, elective)**

This course will focus on aspects of rural and remote practice in the context of Northern Ontario. The course will include topics on health and illness as they relate to rural and remote communities, what defines rural and remote, access to care, social determinants of health, training for rural or remote practice, and recruitment and retention of rural health workforce.

This course will introduce students to organizations that address rural and remote practices globally.

Course-specific Learner Outcomes:

- 1) Basic knowledge of the social, demographic and cultural characteristics of remote rural communities.
- 2) Understand the importance of culturally sensitive programs and information for Indigenous peoples.
- 3) Basic understanding of the relationship between social determinants of health and the patterns of health status, morbidity and mortality in Northern Ontario communities.
- 4) Ability to identify the structure and function of service models in remote and rural community settings.
- 5) Basic understanding of approaches to recruitment and retention of rural health professionals.
- 6) Basic understanding of education and training models for rural health practice.
- 7) Understand the importance of strong relationships within the inter-professional/interdisciplinary team in northern and rural practice.
- 8) Understand the notion of cultural competence, which includes awareness, sensitivity and safety.
- 9) Identify barriers impeding access to health services for Indigenous peoples living in remote communities.

**D. Prerequisites**

Prerequisites for the MMS are listed in the admissions requirement section. It should be noted that the MMS program is targeted to clinical faculty members who hold an MD degree or equivalent.

**E. Other Entry Requirements**

This program is aimed at providing practicing clinicians with the necessary education and skills to conduct impactful health research that is relevant to their patient population. The program is focused on training clinicians who are working primarily in rural or remote regions, and interested in research unique to these environments. The personal statement of interest will provide the opportunity for applicants to indicate their goals and how they relate to the mandate of social accountability.

**F. Period of Study**

Full-time and Part-time Status

Full-time status means that the student is not employed more than 10 hours per week. Graduate students enrolled in full-time study are expected to complete the program of study

(19.5 credits) in two years, including completion and successful defense of the research thesis (MMS 5000).

Students registered part-time are expected to complete the MMS program within six years, including completion and successful defense of the research thesis (MMS 5000). However, if necessary and on a case-by-case basis, an extension may be granted by the Assistant Dean, Graduate Studies.

Change from full-time to part-time status or vice versa can be made at the end of a semester for the following semester. Requests will require the support of the Graduate Supervisor and are made in writing to the Assistant Dean, Graduate Studies, before the end of the semester immediately preceding the requested change in full-time part-time status. Decisions on changing from full-time to part-time or vice versa are the responsibility of the Assistant Dean, Graduate Studies.

#### Leave of Absence

Requests for a Leave of Absence will be considered on a case-by-case basis and require a letter of request made to the Assistant Dean, Graduate Studies, with appropriate documentation for the Leave (e.g., health related will require a letter from a physician), why the Leave is being requested and including a letter of support from the Graduate Supervisor. Normally, a student will not be eligible for more than three Leaves of Absence.

A Leave of Absence is considered time away from the graduate program and will not be logged as period of study in the Graduate Program; therefore, no fees will be charged and the student will not accumulate time in the program.

Decisions on granting a Leave of Absence are made by the Assistant Dean, Graduate Studies.

#### Time Extensions

Graduate students may request extensions to their programs to the Assistant Dean, Graduate Studies. Extensions will be granted on a case-by-case basis and will require support from the Graduate Supervisor. Extensions will only be granted on a term-by-term basis, up to three terms (one full year).

### **G. Course Map**

The MMS program may be completed by full-time or part-time study.

A student enrolled in the MMS full-time will be expected to complete all program requirements within two years (6 semesters), as shown in the course map, Table 1. This time frame is sufficient to allow the development of a Master's level research project while also engaged in courses.

It is anticipated that while students have the option of full-time enrollment many will enroll in the MMS as part-time students. In such cases a flexible or asynchronous time table is available so that course work can be scheduled around clinical duties.

All students will be required to complete MMS 5100 in the first semester of their program and MMS 5200 in the second semester of their program. Students will be required to complete MMS 5300 in the first year of the program. The research thesis (MMS 5000) may also begin in the first semester but, for a part-time student, it may not begin in full until the third semester. MMS 5100, Introduction to Research in Medical Studies, MMS 5200, Independent Study/or Advanced Topics, and MMS 5300, Bioethics and Research Integrity, will all facilitate progress of the research-based program and provide the opportunity for exposure to their field of study. The remaining course requirements (1.5 credit hours) and the thesis research will be completed over the remaining four years.

There are four required courses: MMS 5000, Research Thesis; MMS 5100, Introduction to Research in Medical Studies; MMS 5200, Independent Study/or Advanced Topics and MMS 5300, Bioethics and Research Integrity. The students have the option of choosing among 5400, 5500 or 5600 to fulfill their complement of credits. Students may also request to take additional courses beyond the required 19.5 credits and these are indicated as optional in the course map shown in Table 1.

**Table 1** Course map for full-time and part-time studies.

<b>Year</b>	<b>Semester</b>	<b>Course Number and Title</b>	<b>Credit hours</b>
<b>1<sup>st</sup> Year</b>	<b>Fall</b>	MMS 5000 – Research Thesis	9 (total)
		MMS 5100 - Introduction to Research in Medical Studies	3
<b>1<sup>st</sup> Year</b>	<b>Winter</b>	MMS 5000 – Research Thesis	9 (total)
		MMS 5200 - Independent Study/or Advanced Topics	3
<b>1<sup>st</sup> Year</b>	<b>Summer</b>	MMS 5000 – Research Thesis	9 (total)
		MMS 5300	3
<b>2<sup>nd</sup> Year</b>	<b>Fall</b>	<b>Fall</b> MMS 5000 – Research Thesis	9 (total)
		One of MMS 5400, 5500 or 5600	1.5
<b>2<sup>nd</sup> Year</b>	<b>Winter</b>	MMS 5000 – Research Thesis	9 (total)
		MMS XXXX – optional if desire	
<b>2<sup>nd</sup> Year</b>	<b>Summer</b>	MMS 5000 – Research Thesis	9 (total)
		MMS XXXX – optional if desired	

<b>3<sup>rd</sup> – 5<sup>th</sup> Years</b>	Relevant for part-time students	Completion of MMS 5000 – Research Thesis Completion of any other course requirements	9 (total)
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## **H. Graduation Requirements**

The MMS program is a joint degree program of Lakehead and Laurentian Universities offered by NOSM. MMS graduates, like NOSM’s medical undergraduates, will receive a joint degree from both Lakehead and Laurentian Universities.

Students graduating with the MMS degree will have successfully completed a research thesis, including written and oral components, MMS 5100, MMS 5200 and MMS 5300 and one additional course taken from MMS 5400, 5500 and 5600. A B-level grade is required for successful completion of the courses. The thesis project can be written in a traditional thesis format, or in manuscript format, leading to publication.

The Assistant Dean, Graduate Studies, on the recommendation of the Supervisory committee, will appoint thesis examiners. The examination committee will consist of one internal and one external examiner (external to NOSM). The thesis is required to be passed on both the oral and written components.

## **I. Student Appeals**

Students will have the ability to question a course grade or evaluation within 10 working days of the outcome of a course decision. An attempt to resolve a challenge regarding a grade or evaluation in a course will first be made with the course instructor. Discussion at this level may include the supervisor and/or Assistant Dean, Graduate Studies. In the case where a resolution is not obtained through such consultation, the student may make a formal appeal through the NOSM Academic Council Appeals Committee ([https://www.nosm.ca/uploadedFiles/About\\_Us/Governance/NOSM%20Policy%20Regarding%20Academic%20Appeals.pdf](https://www.nosm.ca/uploadedFiles/About_Us/Governance/NOSM%20Policy%20Regarding%20Academic%20Appeals.pdf)).

During the course of a student’s graduate program there may be situations of conflict that arise between the student and supervisor or supervisory committee. As a first approach the parties are encouraged to resolve differences of opinion and conflict through regular channels of communication involving the student, supervisor and supervisory committee. If necessary the Assistant Dean, Graduate Studies, or designate, may be asked to resolve a conflict between student, supervisor and/or supervisory committee. If no resolution is forthcoming the student may submit a written request for involvement of the Academic Council Appeals Committee.

### **III. Mode of Delivery**

#### Distributed Community Engaged Learning (DCEL)

The NOSM campus includes over 90 communities across Northern Ontario, including the two universities situated 1000 km apart in Thunder Bay and Sudbury. There are more than 70 teaching and research sites distributed across Northern Ontario. The School developed a unique model of distributed education, (DCEL)<sup>2</sup>, which focuses on community engagement in order to provide experiences for students situated throughout the geographic area of Northern Ontario. This model is the basis for the MMS graduate program.

The curriculum will be delivered using a variety of methods, based on the DCEL model and taking advantage of the extensive electronic networking services available at NOSM (see Resources). Students will be able to access course material asynchronously, as well as attend fixed schedule teaching using an appropriate service provider. The core faculty members have experience in graduate teaching as well as medical school teaching and are familiar with the distributed mode of education and learning at NOSM.

The aim of the MMS program is to train clinicians to conduct research while working in community-based practice. DCEL, which consists of widely distributed human and instructional resources, independent of time and place in community-partner locations across Northern Ontario, will promote coordination of learning and community engagement such that students can undertake their research project in the community in which they provide service.

#### Research-based Program

The MMS program is a research-based program. The course material is designed to incorporate the current state of the disciplines and provide resources for students to conduct their own research. In order to truly understand the complexities of research, in particular as practicing physicians, it is important for the students to engage in research. The MMS program is designed to give in depth opportunity, in a setting that provides direction, guidance and support from the core MMS faculty. By providing this environment the students will be able to develop their research programs at the same level as other research-based Master's level programs at Lakehead and Laurentian Universities and comparable to programs at other Universities.

#### MMS Program Workshop

Students in the MMS program are expected to attend at least one face-to-face MMS Program Workshop per year, organized by the Assistant Dean, Graduate Studies. The workshop will be held in conjunction with either Northern Constellations or the Northern Health Research Conference, both well-established conferences sponsored by NOSM. Northern Constellations, held annually since 2011, is a professional development and continuing medical education conference. The Northern Health Research Conference, held annually since 2006, is a research

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<sup>2</sup> Strasser et al. Canada's New Medical School: The Northern Ontario School of Medicine: Social Accountability Through Distributed Community Engaged Learning. Acad. Med. 2009; 84: 1459-1464



conference that provides the opportunity for research presentations in either oral or poster format.

The purpose of the MMS Program Workshop is to provide a venue for networking, program evaluation and presentations. This will be an opportunity for MMS graduate students and faculty to consider the program as a whole and provide input on the program.

The MMS Program Workshop will consist of four formal components:

1. Research Proposal Presentations – students will each be required to give an update on their research projects. The objectives of this session are for students to present successes and challenges with respect to their research projects and receive constructive feedback from the group on their research projects. It is recommended that research supervisors also attend this session.
2. Program Update – this session is provided to review the program and provide any updates regarding the program.
3. Guest Lecturer – the Assistant Dean will use this as an opportunity to invite a specific guest lecturer to speak on topics that pertain to clinical research training in rural, remote or Northern environments including Indigenous or Francophone research.
4. Program Evaluation – time will be allocated for the students to provide written evaluation of the MMS program.

The MMS Program Workshop will be held one year at Northern Constellations and the following year at the Northern Health Research Conference, rotating between meetings annually. Students will be encouraged to attend and/or present at these meetings, which are accredited for continuing medical education.

#### **IV. Master's Degree Level Expectations**

There are 17 Program-specific Learner Outcomes (PLOs) given in Section I.E. These 17 PLOs align with the course-specific learner outcomes as described in Section II.C and the degree level expectations provided in this section. The Degree level expectations, course alignment and PLOs are summarized in Table 2.

##### **Depth and Breadth of Knowledge**

Graduates from the MMS program will possess the knowledge and understanding of their field of research, how it relates within the health system and the translational effectiveness of putting research findings into practice.

This outcome will be acquired through their independent Research Thesis (MMS 5000) and Independent Study/or Advanced Topics course (MMS 5200), in addition to courses such as

Critical Appraisal of Research Reports (MMS 5500) and Special Topics in Rural and Remote Practice (MMS 5600).

*Alignment with PLOs<sup>3</sup>, students will:*

1. Have an in-depth knowledge of their research topic.
2. Be able to develop research questions stemming from rural or remote practice.
3. Recognize research unique to the health of Indigenous and Francophone populations.
4. Understand the concept of social accountability as it pertains to research and the patient populations that the physician services
5. Be able to undertake a critical appraisal of health research publications and apply this to their own work.
6. Understand translation of research results into practice.

### **Research and Scholarship**

Graduates from the MMS program will possess a conceptual understanding of the skills and training necessary to engage in independent health research involving patients or community members, including oral and written forms of communication and publication genres. Students will have a basic understanding of funding opportunities and styles.

This material will be attained through the Introduction to Research in Medical Studies course (MMS 5100), Research Grant Writing (MMS 5400) and Critical Appraisal of Research Reports (MMS 5500) courses.

*Alignment with PLOs, students will:*

1. Be able to identify the components that constitute a research project from designing a question that can be answered, applying appropriate methods to conduct the research plan, collecting and analyzing data to final dissemination of research results.
2. Know the differences between qualitative and quantitative research design elements including methodologies and analysis and limitations of each.
3. Be able to apply appropriate statistical analysis to their own project and understand basic concepts of statistical analysis.
4. Gain expertise in writing in a variety of styles, including grants, essays and publication format.
5. Understand the importance of culturally sensitive health data and information for Indigenous peoples.
6. Be able to clearly communicate research findings in both verbal and written form.
7. Have a basic understanding of the health research funding environment in Canada.

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<sup>3</sup> The numbering refers to the numbering of the PLOs as given in Section I.E.

## **Level of Application of Knowledge**

Graduates from the MMS program will be able to apply their knowledge through their understanding of experimental design and research methods, critical appraisal and application of the principles of research ethics and integrity.

Students will gain this knowledge through the courses Introduction to Research in Medical Studies (MMS 5100), Bioethics and Research Integrity (MMS 5300) and Critical Appraisal of Research Reports (MMS 5500). A key component of this program is the use of NOSM's DCEL model, which incorporates community in the learning process, which will also be highlighted in the Special Topics in Rural and Remote Practice (MMS 5600). Through the Independent Study/or Advanced Topics course (MMS 5200) students will gain an appreciation of how their own research fits within the broader field of research in their area of study.

*Alignment with PLOs, students will:*

1. Be able to undertake a critical appraisal of health research publications and apply this to their own work.
2. Understand translation of research results into practice.
3. Have an understanding of the social determinants of health, and their relationship to health status and health services in rural and remote communities.
4. Be able to identify the components that constitute a research project from designing a question that can be answered, applying appropriate methods to conduct the research plan, collecting and analyzing data to final dissemination of research results.
5. Know the differences between qualitative and quantitative research design elements including methodologies and analysis and limitations of each.
6. Be able to apply appropriate statistical analysis to their own project and understand basic concepts of statistical analysis.
8. Be able to clearly communicate research findings in both verbal and written form.
9. Understand the governance models for oversight of research in particular as they relate to topics of ethics, integrity, and conflict of interest.
10. Have a basic understanding of educational and training models that support recruitment and retention of health providers in rural and remote communities.
11. Understand the importance of strong relationships within the inter-professional/interdisciplinary team in northern and rural practice.

## **Professional Capacity/Autonomy**

The students enrolled in the MMS graduate program are MDs, as such, they currently display and exercise professionalism and decision-making.

The aim of courses such as Introduction to Research in Medical Studies (MMS 5100), Independent Study/or Advanced Topics (MMS 5200), Bioethics and Research Integrity (MMS 5300) and Critical Appraisal of Research Reports (MMS 5500), in addition to conducting their

own research program (MMS 5000) are to provide these professionals with additional tools to conduct impactful research, contribute to their field of expertise, translate their research into practice and promote life-long professional development. In addition, the program is designed to be socially accountable based on NOSM's social accountability mandate being responsive to the health care needs of the communities in the north with a focus on improving health (MMS 5600).

*Alignment with PLOs, students will:*

1. Have an in-depth knowledge of their research topic.
2. Be able to undertake a critical appraisal of health research publications and apply this to their own work.
3. Be able to develop research questions stemming from rural or remote practice.
4. Recognize research unique to the health of Indigenous and Francophone populations.
5. Understand the concept of social accountability as it pertains to research and the patient populations that the physician services.
6. Understand translation of research results into practice.
7. Have an understanding of the social determinants of health, and their relationship to health status and health services in rural and remote communities.
8. Be able to identify the components that constitute a research project from designing a question that can be answered, applying appropriate methods to conduct the research plan, collecting and analyzing data to final dissemination of research results.
9. Be able to clearly communicate research findings in both verbal and written form.
10. Understand the governance models for oversight of research in particular as they relate to topics of ethics, integrity, and conflict of interest.
11. Have a basic understanding of educational and training models that support recruitment and retention of health providers in rural and remote communities.
12. Understand the importance of strong relationships within the inter-professional/interdisciplinary team in northern and rural practice.

### **Level of Communications Skills**

Graduates of the MMS program will be able to present research findings orally and in writing in a variety of formats.

All courses will provide the opportunity for a variety of presentation styles but their Research Thesis course (MMS 5000) and the Research Grant Writing (MMS 5400) and Critical Appraisal of Research Reports (MMS 5500) courses are specifically designed to promote communication skills. In addition the MMS Program Workshop will provide students the opportunity to participate in conferences and workshops sponsored by NOSM (Northern Health Research Conference and Northern Constellations). Students will also be encouraged to present their work at other conferences such as the Association of Faculties of Medicine of Canada, Canadian Conference on Medical Education; and other national and international conferences. Students

will be supported and mentored in publishing their research in journals in the relevant field of study.

*Alignment with PLOs, students will:*

1. Be able to undertake a critical appraisal of health research publications and apply this to their own work.
2. Gain expertise in writing in a variety of styles, including grants, essays and publication format.
3. Be able to clearly communicate research findings in both verbal and written form.
4. Understand the importance of culturally sensitive health data and information for Indigenous peoples.

**Awareness of Limits of Knowledge**

Graduates of the MMS program will be aware of the complexities of conducting health research and the relationship with clinical practice.

In particular, conducting their own research thesis (MMS 5000) and Independent Study/or Advanced Topics course (MMS 5200) will provide a basis for positioning their research in the broader context of the field of health research. The courses in Bioethics and Research Integrity (MMS 5200), Critical Appraisal of Research Reports (MMS 5500) and Special Topics in Rural and Remote Practice (MMS 5600) are intended to draw attention to limitations and applications of research in real world situations.

*Alignment with PLOs, students will:*

1. Have an in-depth knowledge of their research topic.
2. Be able to undertake a critical appraisal of health research publications and apply this to their own work.
3. Understand translation of research results into practice.
4. Have an understanding of the social determinants of health, and their relationship to health status and health services in rural and remote communities.
5. Understand the governance models for oversight of research in particular as they relate to topics of ethics, integrity, and conflict of interest.
6. Have a basic understanding of educational and training models that support recruitment and retention of health providers in rural and remote communities.
7. Understand the importance of culturally sensitive health data and information for Indigenous peoples

**Table 2** Degree level expectations and program-specific learner outcomes (PLOs). The numbers in the PLOs column refer to the specific PLOs listed in Section I.E

Master’s Degree Level Expectations	Program-Specific Learner Outcomes
Depth and Breadth of Knowledge	

<p>Graduates from the MMS program will possess the knowledge and understanding of their field of research, how it relates within the health system and the translational effectiveness of putting research findings into practice. This outcome will be acquired through their independent Research Thesis (MMS 5000) and Independent Study/or Advanced Topics course (MMS 5200), in addition to courses such as Critical Appraisal of Research Reports (MMS 5500) and Special Topics in Rural and Remote Practice (MMS 5600).</p>	<ol style="list-style-type: none"> <li>1. Have an in-depth knowledge of their research topic.</li> <li>2. Be able to develop research questions stemming from rural or remote practice.</li> <li>3. Recognize research unique to the health of Indigenous and Francophone populations.</li> <li>4. Understand the concept of social accountability as it pertains to research and the patient populations that the physician services</li> <li>5. Be able to undertake a critical appraisal of health research publications and apply this to their own work.</li> <li>6. Understand translation of research results into practice.</li> </ol>
<p><b>Research and Scholarship</b></p> <p>Graduates from the MMS program will possess a conceptual understanding of the skills and training necessary to engage in independent health research involving patients or community members, including oral and written forms of communication and publication genres. Students will have a basic understanding of funding opportunities and styles. This material will be attained through the Introduction to Research in Medical Studies course (MMS 5100) and Research Grant Writing (MMS 5400) and Critical Appraisal of Research Reports (MMS 5500) courses.</p>	<ol style="list-style-type: none"> <li>1. Be able to identify the components that constitute a research project from designing a question that can be answered, applying appropriate methods to conduct the research plan, collecting and analyzing data to final dissemination of research results.</li> <li>2. Know the differences between qualitative and quantitative research design elements including methodologies and analysis and limitations of each.</li> <li>3. Be able to apply appropriate statistical analysis to their own project and understand basic concepts of statistical analysis.</li> <li>4. Gain expertise in writing in a variety of styles, including grants,</li> </ol>

	<p>essays and publication format.</p> <p>5. Understand the importance of culturally sensitive health data and information for Indigenous peoples.</p> <p>6. Be able to clearly communicate research findings in both verbal and written form.</p> <p>70. Have a basic understanding of the health research funding environment in Canada.</p>
<p><b>Level of Application of Knowledge</b></p> <p>Graduates from the MMS program will be able to apply their knowledge through their understanding of experimental design and research methods, critical appraisal and application of the principles of research ethics and integrity. Students will gain this knowledge through the courses in Introduction to Research in Medical Studies (MMS 5100), Bioethics and Research Integrity (MMS 5300) and Critical Appraisal of Research Reports (MMS 5500). A key component of this program is the use of NOSM’s DCEL model, which incorporates community in the learning process, which will also be highlighted in Special Topics in Rural and Remote Practice (MMS 5600). Through the Independent Study/or Advanced Topics course (MMS 5200) students will gain an appreciation of how their own research fits within the broader field of research in their area of study.</p>	<p>1. Be able to undertake a critical appraisal of health research publications and apply this to their own work.</p> <p>2. Understand translation of research results into practice.</p> <p>3. Have an understanding of the social determinants of health, and their relationship to health status and health services in rural and remote communities.</p> <p>4. Be able to identify the components that constitute a research project from designing a question that can be answered, applying appropriate methods to conduct the research plan, collecting and analyzing data to final dissemination of research results.</p> <p>5. Know the differences between qualitative and quantitative research design elements including methodologies and analysis and limitations of each.</p> <p>6. Be able to apply appropriate statistical analysis to their own</p>

	<p>project and understand basic concepts of statistical analysis.</p> <p>8. Be able to clearly communicate research findings in both verbal and written form.</p> <p>9. Understand the governance models for oversight of research in particular as they relate to topics of ethics, integrity, and conflict of interest.</p> <p>10. Have a basic understanding of educational and training models that support recruitment and retention of health providers in rural and remote communities.</p> <p>11. Understand the importance of strong relationships within the inter-professional/interdisciplinary team in northern and rural practice.</p>
<p><b>Professional Capacity/Autonomy</b></p> <p>The students enrolled in the MMS graduate program are MDs. As such, they currently display and exercise professionalism and decision-making. The aim of courses such as Introduction to Research in Medical Studies (MMS 5100), Independent Study/or Advanced Topics (MMS 5200), Bioethics and Research Integrity (MMS 5300) and Critical Appraisal of Research Reports (MMS 5500), in addition to conducting their own research program (MMS 5000) is to provide these professionals with additional tools to conduct impactful research, contribute to their field of expertise, translate their research into practice and promote life-long professional development. In addition, the program is designed to be socially accountable based on NOSM’s social accountability mandate being responsive to the health care needs of the</p>	<p>1. Have an in-depth knowledge of their research topic.</p> <p>2. Be able to undertake a critical appraisal of health research publications and apply this to their own work.</p> <p>3. Be able to develop research questions stemming from rural or remote practice.</p> <p>4. Recognize research unique to the health of Indigenous and Francophone populations.</p> <p>5. Understand the concept of social accountability as it pertains to research and the patient populations that the physician services.</p> <p>6. Understand translation of research results into practice.</p>



<p>communities in the north with a focus on improving their health (MMS 5600).</p>	<p>7. Have an understanding of the social determinants of health, and their relationship to health status and health services in rural and remote communities.</p> <p>8. Be able to identify the components that constitute a research project from designing a question that can be answered, applying appropriate methods to conduct the research plan, collecting and analyzing data to final dissemination of research results.</p> <p>9. Be able to clearly communicate research findings in both verbal and written form.</p> <p>10. Understand the governance models for oversight of research in particular as they relate to topics of ethics, integrity, and conflict of interest.</p> <p>11. Have a basic understanding of educational and training models that support recruitment and retention of health providers in rural and remote communities.</p> <p>12. Understand the importance of strong relationships within the inter-professional/interdisciplinary team in northern and rural practice.</p>
<p><b>Level of Communications Skills</b>  Graduates in the MMS program will be able present research findings orally and in writing in a variety of formats. All courses will provide the opportunity for a variety of presentation styles but their Research Thesis course (MMS 5000), the Research Grant Writing (MMS 5400) and Critical Appraisal of Research Reports courses</p>	<p>1. Be able to undertake a critical appraisal of health research publications and apply this to their own work.</p> <p>2. Gain expertise in writing in a variety of styles, including grants, essays and publication format.</p> <p>3. Be able to clearly communicate</p>

<p>(MMS 5500) are specifically designed to promote communication skills. Students will have the opportunity to participate in conferences and workshops sponsored by NOSM (Northern Health Research Conference, Northern Constellations), Association of Faculties of Medicine of Canada (Canadian Conference on Medical Education), and other national and international conferences. Students will be supported and mentored in publishing their research in journals in the relevant field of study.</p>	<p>research findings in both verbal and written form.</p> <ol style="list-style-type: none"> <li>4. Understand the importance of culturally sensitive health data and information for Indigenous peoples.</li> </ol>
<p><b>Awareness of Limits of Knowledge</b></p> <p>Graduates of the MMS program will be aware of the complexities of conducting health research and the relationship with clinical practice. In particular, conducting their own Research Thesis (MMS 5000) and Independent Study/or Advanced Topics course (MMS 5200) will provide a basis for positioning their research in the broader context of the field of health research. The courses in Bioethics and Research Integrity (MMS 5200), Critical Appraisal of Research Reports (MMS 5500) and Special Topics in Rural and Remote Practice (MMS 5600) are intended to draw attention to limitations and applications of research in real world situations.</p>	<ol style="list-style-type: none"> <li>1. Have an in-depth knowledge of their research topic.</li> <li>2. Be able to undertake a critical appraisal of health research publications and apply this to their own work.</li> <li>3. Understand translation of research results into practice.</li> <li>4. Have an understanding of the social determinants of health, and their relationship to health status and health services in rural and remote communities.</li> <li>5. Understand the governance models for oversight of research in particular as they relate to topics of ethics, integrity, and conflict of interest.</li> <li>6. Have a basic understanding of educational and training models that support recruitment and retention of health providers in rural and remote communities.</li> <li>7. Understand the importance of culturally sensitive health data and</li> </ol>

	information for Indigenous peoples.
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**V. Assessment of Teaching and Learning**

The student’s achievement of the learning objectives will be assessed and determined through exams and written and oral assignments associated with the required courses. The assessments for each course are outlined in Table 3.

**Table 3** Course number, title, course-specific learner outcomes and assessment for each of the graduate courses in the MMS program

<b>Course</b>	<b>Masters level Course-Specific Learner Outcomes</b>	<b>Assessment</b>
<b>MMS 5000 Research Thesis</b>	<ol style="list-style-type: none"> <li>1. Formulate a novel research question</li> <li>2. Write a thesis with introduction, methodology, results, figures, tables, discussion and references</li> <li>3. Collect analyze and interpret data</li> <li>4. Defend research work in an oral defense</li> </ol>	<p>Students will be required to meet regularly with their supervisor, at a minimum four times a year and to meet twice per year with their supervisory committee. The supervisory committee will provide written feedback on their progress and identify any shortcomings, which require particular attention.</p> <p>Final assessment will be successful written thesis, examined by two reviewers and successful oral defense.</p>
<b>MMS 5100 Introduction to Research in Medical Studies</b>	<ol style="list-style-type: none"> <li>1. Knowledge of components that form a research study</li> <li>2. Basic understanding of different research designs</li> <li>3. Basic understanding of research terminology including purpose statement, research question, hypothesis, dependent and independent variables, translational research, etc.</li> <li>4. Basic understanding of quantitative and qualitative methodologies, data collection,</li> </ol>	<p>Students will be assessed using a variety of formats, including short and long answers and multiple choice style questions and application of knowledge to prepared scenarios. Assessment for this course will be largely in written format.</p>

	<p>statistical methods, and data analysis</p> <ol style="list-style-type: none"> <li>5. Knowledge of the predominant statistical methods used in clinical research</li> <li>6. Basic understanding of “big data” and “administrative data” sets, how and when they are used in health research</li> <li>7. Knowledge of the steps associated with developing an independent study plan</li> <li>8. Ability to conduct in depth literature review</li> <li>9. Basic understanding of steps used in critical appraisal</li> <li>10. Basic understanding of principles of research integrity and ethics</li> </ol>	
<p><b>MMS 5200</b> <b>Independent Study/or Advanced Topics</b></p>	<ol style="list-style-type: none"> <li>1. In depth knowledge of the topic area</li> <li>2. Ability to critically evaluate literature in the topic area and compare and contrast research related to the topic area</li> <li>3. Knowledge of the goals, aims and objectives of research in the topic area</li> </ol>	<p>Students will be assessed through essays and oral presentation of topic areas.</p>
<p><b>MMS 5300</b> <b>Bioethics and Research Integrity</b></p>	<ol style="list-style-type: none"> <li>1. Knowledge of ethical issues related to the design, implementation, interpretation and dissemination of health research projects</li> <li>2. Basic understanding of research misconduct, conflict of interest and related topics</li> <li>3. Knowledge of the ethical considerations in human and</li> </ol>	<p>Students will be asked to review health research scenarios, identify issues related to research ethics and misconduct, and identify conflicts of interest and identify how risks may be managed, utilizing their knowledge of local, national and international governance guidelines and models. The students will be evaluated through essays and oral presentations as well as</p>

	<p>animal research</p> <ol style="list-style-type: none"> <li>4. Knowledge of local, national and international governance structures for research ethics and integrity</li> <li>5. Basic understanding of informed consent</li> <li>6. Basic understanding of issues concerning privacy and confidentiality</li> <li>7. Knowledge of strategies to minimizing risk in research</li> </ol>	<p>contributions to open discussion on topic areas.</p>
<p><b>MMS 5400</b></p> <p><b>Research Grant Writing</b></p>	<ol style="list-style-type: none"> <li>1. Knowledge of regional, national and international funding opportunities</li> <li>2. Knowledge of the components of a grant proposal: summary, full proposal, figures, tables, budget, etc.</li> <li>3. Ability to write a coherent grant proposal</li> <li>4. Ability to critique a grant proposal</li> <li>5. Basic understanding of steps involved in grant submission and post-grant administration</li> </ol>	<p>Students will be graded on their ability to write a mini grant and critically review a mini grant.</p>
<p><b>MMS 5500</b></p> <p><b>Critical Appraisal of Research Reports</b></p>	<ol style="list-style-type: none"> <li>1. Ability to define critical appraisal</li> <li>2. Basic understanding of how to critically appraise a research article</li> <li>3. Ability to assess the findings as they related to the proposed intent of a research study</li> <li>4. Ability to assess the generalizability of research results</li> <li>5. Ability to assess the relevance and impact of research findings</li> </ol>	<p>Students will be evaluated on their ability to write a critical appraisal of a published research article in their field of study.</p>

<p><b>MMS 5600</b></p> <p><b>Special Topics in Rural and Remote Practice</b></p>	<ol style="list-style-type: none"> <li>1. Basic knowledge of the social, demographic and cultural characteristics of remote rural communities</li> <li>2. Basic understanding of the relationship between social determinants of health and the patterns health status, morbidity and mortality in Northern Ontario communities</li> <li>3. Ability to identify the structure and function of service models in remote rural community settings</li> <li>4. Basic understanding of approaches to recruitment and retention of rural health professionals</li> <li>5. Basic understanding of education and training models for rural health practice</li> </ol>	<p>Students will be assessed on their understanding of the differences in geography, population and service delivery among urban, rural and remote communities; their knowledge of the social determinants of health and how these relate to health status; strategies for recruitment and retention of health care providers and educational models for rural and remote communities.</p> <p>A combination of oral and written formats will be used to evaluate the students.</p>
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All course offerings support and meet the Degree Level Expectations and students will be required to maintain a B-level on all courses to remain in the program.

**VI. Quality and Other Indicators**

NOSM strives for Continuous Quality Improvement (CQI) for faculty, staff and learners and quality programming is included in the strategic goals for the School for 2015-2020 (Enrich our educational programs to foster exemplary quality health care in rural and remote communities). As such the integrated action plan specifically identifies CQI training for faculty, staff and learners for each academic program and the research portfolio. Maintaining quality improvement includes meeting accreditation standards for all programs (undergraduate medical education, post graduate education and continuing education), including Quality Council approval of the MMS program. As a component of the integrated action plan of the Strategic Plan quality improvement in the academic programs is tracked monthly. The School encourages and provides opportunity for faculty, staff and learners to receive CQI training.

NOSM supports an annual professional and continuing education meeting, Northern Constellations. This event provides workshops for faculty participation to maintain and improve

their academic standards. Northern Constellations includes sessions on research, ethics and integrity, information technology and library resources. Graduate students will be encouraged to attend Northern Constellations annually and every second year the MMS Program Workshop, described in Section III, will be held in association with Northern Constellation. This is an opportunity for faculty and students in the MMS program to exchange information on the quality of the program.

The Graduate Studies Committee (GSC), described in Section VII.A, will be responsible for ensuring the quality of the MMS program and making representation to the NOSM Academic Council. Specifically, the GSC will ensure and coordinate regular and systematic assessment and review of the MMS program and will be responsible for reviewing and recommending to the Assistant Dean, Graduate Studies, members of faculty to be considered as core faculty members for the graduate program, including eligibility to supervise graduate students.

## **VII. Resources**

### **A. Administration**

The MMS program will be administered under the NOSM Research Portfolio, with the Assistant Dean, Graduate Studies, reporting to the Associate Dean, Research. The Research Office has administrative support in both Thunder Bay and Sudbury, including a Research Office Coordinator and Research Coordinator.

#### Graduate Studies Committee (GSC)

The Graduate Studies Committee (GSC) is a standing committee of Academic Council. The current role of this committee is to oversee the development of the MMS program, but once the MMS program is established, it will continue as a committee of Academic Council to oversee the academic needs of the program.

The current membership of the GSC includes the Associate Dean, Research; Assistant Dean, Research; representatives from each of the three Academic Divisions (Clinical, Human and Medical Sciences); two members of Academic Council and three members at-large. Once the MMS program is approved, the membership of the GSC will be modified such that the Assistant Dean, Graduate Studies, will replace the Assistant Dean, Research, and will be the chair of GSC.

The GSC will advise Academic Council on policies and practices related to the delivery and evaluation of graduate-level courses; review course and/or curriculum changes; advise Academic Council on policies, practices and criteria for admission, evaluation and promotion of MMS graduate students; ensure and coordinate regular and systematic assessment and review of the MMS; and in general oversee the development and continuation of a supportive

environment for the MMS program. The Assistant Dean, Graduate Studies, will be responsible for written and oral reports of the activities of GSC to Academic Council.

The GSC will also be responsible for reviewing and recommending to the Assistant Dean, Graduate Studies, members of faculty to be considered as core faculty members for the graduate program and eligible to supervise graduate students. Core faculty will be those members who have demonstrated research programs, including participation as research supervisors or experience as members on supervisory committees at NOSM or Lakehead, Laurentian or another University. A faculty member wishing to be a graduate student supervisor will need to have the experience of membership on a supervisory committee and will initially be a co-supervisor with an experienced member of the core faculty. Having supervised an undergraduate student summer research project will not be considered adequate supervisory experience.

### B. Faculty

There are 14 NOSM faculty members that make up the core faculty for the MMS program. In making this commitment they have also indicated their willingness to contribute to supervision of graduate students and oversight of courses. As shown in Table 4, and in their CVs, these core faculty members have considerable experience in graduate student training, medical school training, graduate programming, and research.

There are a number of NOSM faculty members, from all three disciplines (Clinical Sciences, Human Sciences and Medical Sciences) who have indicated an interest in contributing to the program.

**Table 4** List of core faculty members for the MMS program.

Name Degree(s)	Publications	Student supervision
Dr. Doug Boreham Ph.D., Biology Professor, Division Head Medical Sciences	2 Book Chapters 85 Refereed-articles 5 Peer-reviewed Proceedings	29 Masters 8 Ph.D. 16 Post-doctoral
Dr. Elizabeth Levin Certified Psychologist, Ph.D., Human Studies, M.A., M.A./M.Sc. Professor, Division Head Human Sciences	7 Books 25 Book Chapters 9 Refereed-articles 71 Book reviews	53 Masters
Dr. David Marsh M.D., Advanced Management Professor, Deputy Dean,	1 Book 12 Book Chapters 90 Refereed-articles	3 Masters 5 Ph.D. 2 Post-doctoral



Associate Dean Community Engagement Chief Medical Director (ON Addiction Treatment Centers)		
Dr. David MacLean Ph.D., Biophysics, M.Sc. Professor, Assistant Dean Research	1 Book review 55 Refereed-articles	9 Masters 5 Ph.D. 1 Post-doctoral
Dr. Marion Maar Ph.D., Applied Medical Anthropology; M.A. Biological Anthropology Associate Professor	3 Book chapters 31 Refereed-articles 1 Educational Manual 1 Creative work 43 Reports	3 Masters Co-supervisor 4 Masters 3 Ph.D.
Dr. Penny Moody-Corbett <sup>4</sup> Ph.D., Physiology, M.A., M.Sc. Professor, Associate Dean Research Senior Associate Dean, Thunder Bay	2 Book Chapters 32 Refereed-articles	3 Masters 1 Ph.D. 3 Post-doctoral
Dr. David Musson M.D., Ph.D. Social and Personality Psychology, Associate Dean Undergraduate Medical Education	6 Book Chapters 11 Refereed-articles	3 Masters 1 Fellow 4 Faculty mentorship
Dr. Brian Ross Ph.D., Molecular Pharmacology and Biochemistry, M.Ed. Professor	78 Refereed-articles 8 Book Chapters	9 Masters 5 Ph.D. 5 Post-doctoral
Dr. Greg Ross Ph.D., Neuroscience Professor	77 Refereed-articles	13 Masters 2 Ph.D. 4 Post-doctoral
Dr. Roger Strasser MB.BS, B.Med.Sci., M.Cl.Sci. Professor Dean and CEO	37 Monographs 141 Refereed-articles	12 Masters 12 Ph.D.

<sup>4</sup> Dr. Moody-Corbett was Associate Dean Research and Graduate Studies, 1999-2011, Faculty of Medicine, Memorial University, overseeing nine graduate programs, enrollment of 100-150 graduate students per year, and attending all comprehensive examinations and oral defences.

Dr. Zach Suntres Ph.D., Pharmacology Professor	8 Invited review papers 3 Review papers 6 Book Chapters 54 Refereed-articles 1 technical report	5 Masters 2 Ph.D. 3 Post-doctoral
Dr. TC Tai Ph.D., Physiology and Neuroscience, M.Sc. Professor	38 Refereed-articles 7 Book Chapters	18 Masters 2 Ph.D. 4 Post-doctoral
Dr. Mark Thibert M.D., M.D.S. Associate Professor	1 Refereed-article	1 Masters 1 Ph.D.
Dr. Sheldon Tobe M.D., M.Sc.C.H. Professor, Chair Aboriginal and Rural Health	139 Refereed-articles 2 Books 6 Book Chapters	9 Masters 1 Post-graduate
Dr. Marina Ulanova M.D., Ph.D., Doctor of Medical Sciences, Immunology (PhD equivalent) Professor	72 Refereed-articles 1 Book Chapter	12 Masters 4 Ph.D. 2 Post-doctoral

### C. Library Resources

The NOSM Health Sciences Library is a unit in the Research Portfolio with physical space in the Medical Science buildings on the Laurentian and Lakehead Campuses and virtual access worldwide ([http://www.nosm.ca/about\\_us/library/home.aspx](http://www.nosm.ca/about_us/library/home.aspx)). The Library staff includes a Director who reports to the Associate Dean, Research, four librarians and four support personnel.

The library is specifically designed to address the needs of clinicians and learners training to become clinicians. The holdings are based on the needs of clinicians who practice in urban, rural and remote locations. The library maintains an extensive digital collection that provides access to information and educational resources to all students, faculty and staff from any geographic location.

The library's tri-annual newsletter, Off the Shelf, provides up to date information on library services, input from library users, and current national issues in library sciences. Library services include guides and tutorials, search assistance, interlibrary loans, distance access, information on evidence-based medicine and open-access policies, and e-resources. The library staff,

annually, provides workshops at the Northern Constellations professional development meeting.

The Library has sufficient resources to provide service for the MMS program.

#### **D. Information Technology**

The NOSM campus includes over 90 communities across Northern Ontario, including the two universities situated 1000 km apart in Thunder Bay and Sudbury. There are more than 70 teaching and research sites distributed across Northern Ontario. The School relies on an advanced information technology (IT) unit to maintain and service the distance requirements in our teaching programs. The NOSM IT unit ([http://www.nosm.ca/about\\_us/organization/administration/tims/home.aspx](http://www.nosm.ca/about_us/organization/administration/tims/home.aspx)) provides a number of services including: support for teaching and learning systems, classroom technologies, communications, networking, and computing infrastructure. The IT unit maintains service support accessible through a help-line and on the NOSM homepage. Course delivery for the MMS will utilize the services of the IT unit; technical leads and information technologists and database and software developers will ensure appropriate access to courses and course materials.

#### **E. Other Resources**

### **VIII. Student Enrollment**

It is anticipated that enrollment will be 4-6 students in the first year of the MMS program and new enrollment of approximately 5 students per year over the first five years. As the target population is physicians, we anticipate that they will most likely be interested in registering for part-time studies.

### **IX. Fiscal Considerations**

The proposed tuitions are shown in Table 5. Comparing full-time versus part-time, overall revenue for full-time will be \$17,500 based on two full academic years (6 semesters). Overall revenue for part-time will be \$19,050 based on five full academic years (15 semesters). The additional revenue derived from part-time studies would account for additional administration and ancillary costs to support part-time program (i.e. ongoing fixed costs).

It is anticipated that since the target population for enrollment are physicians, that supplemental funding or scholarships will not be needed. However, funding agencies, such as Physician Services Incorporated Foundation, which support professional development activities, may be available.

**Table 5** Proposed tuition for full-time and part-time study.

Program type	Proposed Tuition Rate
<b>Full-time (two year program)</b>	
Full-Time – Annual Cost for First 3 Semesters (Year 1)	\$9,000
Full-Time – Annual Cost for Next 3 Semesters (Year 2)	\$8,500
Additional Years (Annual Cost for year extended)	\$8,000
<b>Part-time (five year program)</b>	
Part-time – Per Semester Cost for First 3 Semesters (Year 1)	\$1,350
Part-time – Per Semester Cost for Next 12 Semesters (Year 2-5)	\$1,250
Additional Years (Per Semester Cost for each year extended)	\$1,200

*This template is available for download from the Quality Council's website and may be adapted to meet the needs of an institution's approved IQAP.*

Reviewers' Report on the Proposed Master's Program in Medical Studies at the  
Northern Ontario School of Medicine – a Joint Degree Program of Lakehead and Laurentian Universities

Dr. James Rourke  
MD, CCFP(EM), MCISci, FCFP, FRRMS, FCAHS, LLD  
Professor of Family Medicine  
Director Centre for Rural Health Studies  
Former Dean of Medicine 2004-2016  
Faculty of Medicine  
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Dr. David Snadden  
MB ChB, MCISci, MD, FRCGP, FRCP(Edin), CCFP  
Professor of Family Practice  
Rural Doctors' UBC Chair in Rural Health  
Former Regional Associate Dean and Vice Provost  
Medicine Northern Medical Program 2003-2011  
Former Executive Associate Dean Education UBC  
2011-2016  
Faculty of Medicine  
The University of British Columbia | Northern  
Medical Program  
Northern Health Sciences Centre, UNBC | Prince  
George BC | V2N 4Z9

## **Introduction**

Prior to completing the review criteria below, we thought it would be useful to comment on the unique context of the Northern Ontario School of Medicine (NOSM) and its Partner Universities Lakehead and Laurentian. We were impressed at the degree of collaboration and shared vision concerning the development of this new degree which fits well with the strategic directions of all three institutions. NOSM has a mission and mandate to serve the rural, remote and Indigenous communities of Northern Ontario and has developed its social accountability mission and distributed community engaged learning model in response to this. As part of this it has developed highly effective and sophisticated information and communication systems to connect Faculty and learners across Northern Ontario. We also felt it was important to emphasise the unique nature of the potential students of this new degree as some of our comments relate directly to the challenges this group face in pursuing research degrees. The target group are rural physicians, many of whom work in underserved areas. There is huge enthusiasm for this degree in this unique cohort but it is important to recognise that rural practice is highly intense and unpredictable and that any small rural community is usually only a small step away from a crisis that will take up all a physician's time and energy. It is important, therefore, that the framework of this new degree recognises these unpredictable pressures and has embedded into it flexibility of structure and timing, as well as supports, that will allow students to complete the degree if unforeseen health care circumstances occur.

This program has been designed to meet the need to enhance research capacity in rural physicians across Northern Ontario with the explicit aim of improving rural health research and health outcomes for the population. Our small number of suggestions are intended to enhance what we already see as a sound and innovative program meeting a well-documented need.

### **1. OUTLINE OF THE REVIEW**

*Please indicate whether this review was conducted by desk audit or site visit. For those reviews that included a site visit, please indicate the following:*

- *Who was interviewed:* Our site visit was carried out in person on site at Thunder Bay with video links to Sudbury and by video and telephone links to distributed faculty across Northern Ontario. Please see the

attached document for the visit schedule which details the people we met with on the two-day site visit September 18th and 19th 2017.

- *What facilities were seen:* We viewed the Northern Ontario School of Medicine facilities in Thunder Bay including experiencing its technology network and communication infrastructure and library resources.
- *Any other activities relevant to the appraisal:* We were provided with comprehensive material related to the strategic plans and missions of the three institutions, the Northern Ontario context and research in clinical partnerships, all of which we reviewed.

## 2. EVALUATION CRITERIA

**NOTE:** *Reviewers are asked to provide feedback on each of the following Evaluation Criteria. (Institutions are to add to these criteria if their IQAP includes additional criteria.)*

### 2.1 Objectives

- *Consistency of the program with the institution's mission and academic plans:* We reviewed the documentation provided and had extensive discussions with key stakeholders and are satisfied that the program is consistent with the three institutions' missions and academic plans. This program fits an important need recognized by all three partner institutions and this is a notable strength of the program
- *Clarity and appropriateness of the program's requirements and associated learning outcomes in addressing the institutions own undergraduate or graduate Degree Level Expectations.* We reviewed the program requirements and consider them to be appropriate. The learning outcomes need more specificity to align them to the program and course descriptions so that they also clearly reflect the Northern Ontario context and need, including emphasis on the Northern Ontario School of Medicine's focus on remote, rural and Indigenous issues. The program meets the institutions' degree level expectations.
- *Appropriateness of degree nomenclature.* The degree nomenclature has been carefully considered and we deem the Master of Medical Studies (MMS) appropriate.

### 2.2 Admission requirements

- *Appropriateness of the program's admission requirements for the learning outcomes established for completion of the program:* The admission requirement "Completion of an M.D. degree or equivalent professional degree" is appropriate for the program. The requirements for B average in an undergraduate degree and English (TOEFL) is redundant and could be eliminated.
- *Sufficient explanation of alternative requirements, if any, for admission into a graduate, second-entry or undergraduate program, such as minimum grade point average, additional languages or portfolios, along with how the program recognizes prior work or learning experience:* Not applicable

### 2.3 Structure

- *Appropriateness of the program's structure and regulations to meet specified program learning outcomes and degree level expectations:* Upon detailed discussion and review of the MMS program structure and regulations we deem that these are sufficient to meet the specified program outcomes and degree level expectations. However, given that many of the potential students will be busy rural practitioners, we recommend that the program should avoid scheduling formal course requirements during the summer term as that time can be particularly difficult in terms of clinical demand.
- *For graduate programs, a clear rationale for program length that ensures that the program requirements can be reasonably completed within the proposed time:* We discussed in depth the appropriate length for the MMS time requirement. Other masters programs have found that students who are physicians with heavy, and often unpredictable clinical loads, often need extensions beyond five years to complete their programs. We recommend that the program length be six years and, if necessary, further extensions can be decided on a case-by-case basis by the NOSM Assistant Dean graduate studies working with their graduate studies committee.

This link would be consistent with Laurentian University Masters' degree part-time requirements. We noted that Laurentian University's time requirement for a part-time MBA was eight years, but we felt that was too long for normal completion of the MMS.

## 2.4 Program content

- *Ways in which the curriculum addresses the current state of the discipline or area of study:* Rural health research is a growing and important area of research that is underserved by traditional degree programs. We have reviewed the curriculum and it addresses the current state of this area of study and the needs of the participants to develop the skills to do rural health research.
- *Identification of any unique curriculum or program innovations or creative components:* The focus on developing the research abilities of physicians across northern Ontario through distributed community engaged learning is a major innovation and strength of this program. Course 5300 is very important as it addresses bioethics and research integrity. Consistent with NOSM, Lakehead and Laurentian Universities' Northern Ontario context and the target students, we recommend that course 5300 be increased from 1.5 credits to three credits to allow students to develop a deeper understanding of rural, remote and Indigenous contexts, including cultural competence, in relation to carrying out health research in Northern Ontario.
- *For research-focused graduate programs, clear indication of the nature and suitability of the major research requirements for degree completion.* This is a research focused program and the requirement for major research project is an essential component. This is currently described as a thesis based program but we recommend that the thesis research project can be written in a traditional thesis format or in manuscript format leading to publication. This is consistent with the trend at Lakehead and Laurentian and other universities in Canada. This was supported in the discussions we had, but is not sufficiently documented in the current proposal.
- *Evidence that each graduate student in the program is required to take a minimum of two-thirds of the course requirements from among graduate level courses.* All courses are graduate-level.

## 2.5 Mode of delivery

- *Comment on the appropriateness of the proposed mode(s) of delivery to meet the intended program learning outcomes and Degree Level Expectations.* Mode of delivery is planned to be mixed methods building on NOSM's success at technology enabled distance education and includes some face-to-face meetings timed around conferences that the target audience of physicians are likely to attend. This approach is a strength of the program as it is tailored to the needs of practicing physicians in Northern Ontario and utilises NOSM's established technology infrastructure.

We did hear from prospective students that peer group discussions and face time with supervisors will be important for their learning and this reflects experience at other distant continuing medical education programs. The opportunities for interaction, including face-to-face meetings, could be better articulated in the proposal.

## 2.6 Assessment of teaching and learning

- *Appropriateness of the proposed methods for the assessment of student achievement of the intended program learning outcomes and Degree Level Expectations.* We reviewed the documentation and discussed with faculty and consider the assessment methods to be appropriate.
- *Completeness of plans for documenting and demonstrating the level of performance of students, consistent with the institution's statement of its Degree Level Expectations.* We reviewed the documentation and discussed with faculty and consider the plans for documenting and demonstrating the level of performance to be consistent with the Universities' degree level expectations.

## 2.7 Resources for all programs

- *Adequacy of the administrative unit's planned utilization of existing human, physical and financial resources, and any institutional commitment to supplement those resources, to support the program.* We discussed the resources with the leadership including the Chief Operating Officer and agree that

they are sufficient to support the program and observe, that given the NOSM distributed education infrastructure, the requirements of the MMS will be a small marginal addition to the current technology enabled learning.

- *Participation of a sufficient number and quality of faculty who are competent to teach and/or supervise in the program.* We reviewed the faculty CVs and met with many of the core faculty and consider there is a sufficient number and quality of faculty who are competent to teach and supervise in the program. We observed that they are excited and committed to making this program a success.
- *Evidence that there are adequate resources to sustain the quality of scholarship produced by undergraduate students as well as graduate students' scholarship and research activities, including library support, information technology support, and laboratory access.* NOSM has a well-equipped library and information technology support that has been developed, and functions well, for its distributed medical education programs that will provide excellent support for the MMS. In addition, Lakehead and Laurentian Universities have appropriate research facilities and interested faculty to provide expanded support for the diverse learning interests and needs of MMS students.

## **2.8 Resources for graduate programs only**

- *Evidence that faculty have the recent research or professional/clinical expertise needed to sustain the program, promote innovation and foster an appropriate intellectual climate.* We reviewed the documentation and also met with faculty, and consider that the faculty have recent research, professional and clinical expertise needed to sustain the program, promote innovation and foster an appropriate intellectual climate. We note that many already supervise masters and doctoral students to a high standard and that there is great enthusiasm for being part of this new MMS program.
- *Where appropriate to the program, evidence that financial assistance for students will be sufficient to ensure adequate quality and numbers of students:* Not applicable
- *Evidence of how supervisory loads will be distributed, and the qualifications and appointment status of faculty who will provide instruction and supervision.* We discussed allocation of faculty responsibilities with the leadership and are satisfied that faculty will be released and some current responsibilities will be backfilled to provide sufficient faculty for instruction and supervision.

Beyond the initial core faculty there is a distributed pool of additional clinical and stipendiary faculty with research experience and teaching experience who are available to support NOSM's programs.

## **2.9 Resources for undergraduate programs only**

- *Evidence of and planning for adequate numbers and quality of: (a) faculty and staff to achieve the goals of the program; or (b) of plans and the commitment to provide the necessary resources in step with the implementation of the program; (c) planned/anticipated class sizes; (d) provision of supervision of experiential learning opportunities (if required); and (e) the role of adjunct and part-time faculty.* Not applicable

## **2.10 Quality and other indicators (to be inclusive of the institution's own additional quality indicators)**

- *Definition and use of indicators that provide evidence of quality of the faculty (e.g., qualifications, research, innovation and scholarly record; appropriateness of collective faculty expertise to contribute substantively to the proposed program).* We have examined the CVs, met with many of the core faculty and discussed with the leadership the depth of faculty and their scholarly expertise and activities and deem it appropriate for the proposed MMS program.
- *Evidence of a program structure and faculty research that will ensure the intellectual quality of the student experience.* NOSM already has a strong distributed medical education program structure and developing faculty research with rich connections to the communities throughout Northern Ontario. Combined with its degree granting partners Laurentian and Lakehead Universities and its relationships with clinical research facilities NOSM has a depth and breadth of program structure and faculty research that we deem will ensure the intellectual quality of the student experience.



**NOTE:** Reviewers are urged to avoid using references to individuals. Rather, they are asked to assess the ability of the faculty as a whole to deliver the program and to comment on the appropriateness of each of the areas of the program (fields) that the university has chosen to emphasize, in view of the expertise and scholarly productivity of the faculty.

### 3. OTHER ISSUES

- There are no other issues of note.

### 4. SUMMARY AND RECOMMENDATIONS

**NOTE:** The responsibility for arriving at a recommendation on the final classification of the program belongs to the Appraisal Committee. Individual reviewers are asked to refrain from making recommendations in this respect.

#### **Notable strong and creative attributes**

This program fits a very specific niche within the three institutions that will enhance their offerings and collaborations. The program is complementary to existing programs within the partner universities. The excitement about the program extends all the way from the VPs research to community physicians and the program has the potential to encourage significant contributions to community engaged health research and research relevant to the context of Northern Ontario.

#### **Strengths**

There is remarkable support for this program across the three institutions. It builds on NOSM's success, mandate, distributed model and infrastructure.

The target student group are interested in a breadth of research opportunities including health services research, educational research and small scale locally relevant clinical and community engaged projects, as well as more traditional research activities. The Northern Ontario School of Medicine, through its Social Accountability mandate and its partners, is well positioned to provide and support this breadth of research, though this could be more clearly articulated in the proposal.

Throughout our review process it became clear there was a strong need and demand for the program from physicians across Northern Ontario. This could be more clearly articulated in the proposal.

#### **Areas for improvement**

The program is sound, but the proposal could be strengthened in the following ways:

- Include emphasis on rural, remote and Indigenous health in course outcomes.
- More explicitly describe peer interaction opportunities including face to face meetings.

#### **Opportunities for enhancement**

- Matching students to supervisors is always a challenge for graduate programs, and particularly so when working with very busy rural physicians. We think that for some students it would be beneficial to develop a flexible, facilitated process for matching students to supervisors that will need to be clearly outlined and communicated to prospective students.
- The pressure on busy rural physicians will mean that to enhance their success in the program research support will be invaluable. The program has opportunities to facilitate such support both internally and externally through organisations such as the Northern Ontario Academic Medical Association and the Local Education Groups, both of which have access to enhancement funds.

### Specific steps to improve the program

Overall the program is sound and as external reviewers we have no major concerns. These are minor suggestions for specific steps that we think will improve the program.

- The admission requirement “Completion of an M.D. degree or equivalent professional degree” is appropriate for the program. The requirements for B average an undergraduate degree and English (TOEFL) is redundant and could be eliminated.
- Given that many of the potential students will be busy rural practitioners, we recommend that the program should avoid scheduling formal course requirements during summer term as that time can be particularly difficult in terms of clinical demand.
- We recommend that the program length be six years and if necessary further extensions can be decided on a case-by-case basis by the NOSM Assistant Dean graduate studies working with their graduate studies committee.
- Course 5300 is very important as it addresses the bioethics and research integrity. Consistent with NOSM, Lakehead and Laurentian Universities’ Northern Ontario context and target students we recommend that course 5300 be increased from 1.5 credits to three credits to allow students to develop a deeper understanding of rural, remote and Indigenous contexts, including cultural competence, in relation to carrying out health research in Northern Ontario.
- Currently the MMS is described as a thesis program but we recommend that a research project leading to publication be also a suitable endpoint.

Signature: \_\_\_\_\_  
**Dr. James Rourke**

Date: \_\_\_\_\_

Signature: \_\_\_\_\_  
**Dr. David Snadden**

Date: \_\_\_\_\_

## **Revisions to the MMS Proposal**

The following revisions have been completed in accordance with the suggestions from the external reviewers. These are outlined below and listed in order as they appear in the external reviewers final report.

### **2.1 Objectives**

- *Clarity and appropriateness of the program's requirements and associated learning outcomes in addressing the institutions own undergraduate or graduate Degree Level Expectations.* We reviewed the program requirements and consider them to be appropriate. The learning outcomes need more specificity to align them to the program and course descriptions so that they also clearly reflect the Northern Ontario context and need, including emphasis on the Northern Ontario School of Medicine's focus on remote, rural and Indigenous issues. The program meets the institutions' degree level expectations

**New program learning objectives (PLOs) emphasising NOSM's focus on rural, remote and Indigenous issues have been added.**

### **2.2 Admission requirements**

- *Appropriateness of the program's admission requirements for the learning outcomes established for completion of the program:* The admission requirement "Completion of an M.D. degree or equivalent professional degree" is appropriate for the program. The requirements for B average in an undergraduate degree and English (TOEFL) is redundant and could be eliminated.

**These changes have been made.**

### **2.3 Structure**

- *Appropriateness of the program's structure and regulations to meet specified program learning outcomes and degree level expectations:* Upon detailed discussion and review of the MMS program structure and regulations we deem that these are sufficient to meet the specified program outcomes and degree level expectations. However, given that many of the potential students will be busy rural practitioners, we recommend that the program should avoid scheduling formal course requirements during the summer term as that time can be particularly difficult in terms of clinical demand.

**The following text has been added to Section II. G.**

*"It is anticipated that while students have the option of full-time enrollment many will enroll in the MMS as part-time students. In such cases a flexible or asynchronous time table is available so that course work can be scheduled around clinical duties."*

- For graduate programs, a clear rationale for program length that ensures that the program requirements can be reasonably completed within the proposed time: We discussed in depth the appropriate length for the MMS time requirement. Other masters programs have found that students who are physicians with heavy, and often unpredictable clinical loads, often

need extensions beyond five years to complete their programs. We recommend that the program length be six years and, if necessary, further extensions can be decided on a case-by-case basis by the NOSM Assistant Dean graduate studies working with their graduate studies committee.

**The following text has been added to Section II. F.**

*“However, if necessary and on a case-by-case basis, an extension may be granted by the Assistant Dean, Graduate Studies.”*

#### **2.4 Program content**

- *Identification of any unique curriculum or program innovations or creative components:* The focus on developing the research abilities of physicians across northern Ontario through distributed community engaged learning is a major innovation and strength of this program. Course 5300 is very important as it addresses bioethics and research integrity. Consistent with NOSM, Lakehead and Laurentian Universities’ Northern Ontario context and the target students, we recommend that course 5300 be increased from 1.5 credits to three credits to allow students to develop a deeper understanding of rural, remote and Indigenous contexts, including cultural competence, in relation to carrying out health research in Northern Ontario.

**This has been changed in Section II. B and G. (This now makes the entire program requirement 19.5 credits as compared to 18).**

- *For research-focused graduate programs, clear indication of the nature and suitability of the major research requirements for degree completion.* This is a research focussed program and the requirement for major research project is an essential component. This is currently described as a thesis based program but we recommend that the thesis research project can be written in a traditional thesis format or in manuscript format leading to publication. This is consistent with the trend at Lakehead and Laurentian and other universities in Canada. This was supported in the discussions we had, but is not sufficiently documented in the current proposal.

**The following text has been added to Section II. H.**

*“The thesis project can be written in a traditional thesis format, or in manuscript format, leading to publication.”*

- Evidence that each graduate student in the program is required to take a minimum of two-thirds of the course requirements from among graduate level courses. All courses are graduate-level.

**This was discussed with the reviewers and they were informed that this statement is a direct requirement of the Quality Assurance Framework.**

## 2.5 Mode of delivery

We did hear from prospective students that peer group discussions and face time with supervisors will be important for their learning and this reflects experience at other distant continuing medical education programs. The opportunities for interaction, including face-to-face meetings, could be better articulated in the proposal.

**The MMS Program Workshop (Section III) has been expanded to show details of face-to-face opportunities including networking and interactive presentations.**

## 4.0 SUMMARY AND RECOMMENDATIONS

### Opportunities for enhancement

- Matching students to supervisors is always a challenge for graduate programs, and particularly so when working with very busy rural physicians. We think that for some students it would be beneficial to develop a flexible, facilitated process for matching students to supervisors that will need to be clearly outlined and communicated to prospective students.

**This is not a specific recommendation to make a change in the program proposal, but rather an opportunity to have an internal facilitated process for matching students and advisors. This process will be developed as the admissions components of the MMS program are further refined.**

- The pressure on busy rural physicians will mean that to enhance their success in the program research support will be invaluable. The program has opportunities to facilitate such support both internally and externally through organisations such as the Northern Ontario Academic Medical Association and the Local Education Groups, both of which have access to enhancement funds.

**This is not a specific recommendation to make a change in the program proposal, but an aspect that will be explored in order to provide opportunities for students to access funds.**

### Specific steps to improve the program

Overall the program is sound and as external reviewers we have no major concerns. These are minor suggestions for specific steps that we think will improve the program.

- The admission requirement “Completion of an M.D. degree or equivalent professional degree” is appropriate for the program. The requirements for B average an undergraduate degree and English (TOEFL) is redundant and could be eliminated.

**Done**

- Given that many of the potential students will be busy rural practitioners, we recommend that the program should avoid scheduling formal course requirements during summer term as that time can be particularly difficult in terms of clinical demand.

**Done**

- We recommend that the program length be six years and if necessary further extensions can be decided on a case-by-case basis by the NOSM Assistant Dean graduate studies working with their graduate studies committee.

**Done**

- Course 5300 is very important as it addresses the bioethics and research integrity. Consistent with NOSM, Lakehead and Laurentian Universities' Northern Ontario context and target students we recommend that course 5300 be increased from 1.5 credits to three credits to allow students to develop a deeper understanding of rural, remote and Indigenous contexts, including cultural competence, in relation to carrying out health research in Northern Ontario.

**Done**

- Currently the MMS is described as a thesis program but we recommend that a research project leading to publication be also a suitable endpoint.

**Done**

Chair: Dr. Celine Lariviere (Appointed 2017-2018)

**Joint Senate Committee for NOSM**

A Joint Senate Committee for NOSM "JSC" has been duly constituted by both Senates to review all academic recommendations from the Academic Council and make recommendations to both Senates for their approval.

<b>Lakehead University Members:</b>		
Provost and Vice-President Academic	Dr. Nancy Luckai (designate)	Ex-officio
Chair or a delegate from the Senate undergraduate Studies Committee (appointed for the year by USC, if different from the chair)	Dr. Rachel Warburton	Ex-officio
One student selected by the Lakehead University Student Union (LUSU)	Niharika Shahi	2017-2018
One Faculty Member	Dr. Paolo Sanzo	2015-2018
One Faculty Member who is a Senator elected by Senate	Dr. Eltayeb Mohamedelhassan	2017-2018
One individual from Lakehead University with expertise in a health related area, elected by Lakehead Senate (This individual may qualify through a teaching or research specialization)	Dr. Sabah Mohammed	2015-2018
NOSM Appointment (non-voting)	Dr. Penny Moody-Corbett	Ex-officio
Secretary of Senate (non-voting)	Ms. Barbara H. Eccles, Legal Counsel and Interim University Secretary	Ex-officio

<b>Laurentian University Members:</b>		
Vice-President, Academic and Provost	Dr. Celine Lariviere (designate)	Ex-officio
One representative from NOSM	Dr. David Marsh	2015-2018
Three faculty members	Dr. Abdel Omri	2015-2018
	Dr. Mazen Saleh	2015-2018
	Lissa Gagnon	2017-2019
One NOSM student	Benoit Lafleur	2016-2018
Secretary of Senate (non-voting)	Diane Roy (Interim Registrar and Secretary)	Ex-officio

<sup>1</sup> Updated: November 9, 2017 – Laurentian Senate Office