



# Completing the Master's Program in HCIN or BCB: Internship, Capstone Project or Thesis

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# Agenda

- Introduction
- Internship BMI 590
- Capstone Project BMI 581
- Thesis Option BMI 503
- Q/A Session



## INTERNSHIP

- BMI 590
- 49 credits
- Real World Project
- 22 weeks (two term) internship
- 10-15 Page Final Paper Deliverable



This is a flexible option and it is student driven. The student chooses the company or group to work with, and they are responsible for initiating contact and arranging the internship.

# Before Registering for Internship Credits

- Select an internship advisor who has an appointment with DMICE and is a member of graduate faculty. Submit [Mentor Assignment Form](#)
- Select a company or department where you would like to intern, and find a mentor there. This will become your sponsoring institution.
- Fill out and submit the Internship paperwork

# Internship Paperwork

## Internship Forms:

- Interest Form and resume
- Project Plan
- Project Agreement
- Training Affiliation Agreement. The Internship Coordinator will assist in getting an affiliation agreement approved and signed by your sponsoring institution and the OHSU Contracts office.
- [Mentor Assignment Form](#)

# During the Internship

- Work with onsite sponsor to implement project plan.
- Respond to three emailed evaluation surveys during each term (6 in total).
  - The surveys will monitor how you are doing, and your OHSU advisor will use them to grade you.

# Complete the project and submit a final write-up

Students will submit a final write-up to your DMICE faculty advisor (cc Education Coordinator) at the end of the second term of BMI 590. Your final 10-15 page report should include:

- the initial plans for your internship,
- a description of your time in the internship,
- a description of the informatics component,
- how or whether the internship evolved during your time,
- what you learned during your internship, and,
- future directions for the project you worked on, if applicable.



# Master's Capstone Project

- BMI 581
- 49 credits
- Capstone is two to three terms
- 30+ page Research Paper or Publishable Manuscript



This is a good option for students who may want to work in industry or academia. This is a non-independent research project, and may lead to a manuscript publication.

# Before Registering for Capstone Credits

- Select a capstone advisor who has an appointment with DMICE and is a member of graduate faculty
- Work with Advisor to create a one-page outline of project/research paper. Submit to Education Coordinator
- Submit [Mentor Assignment Form](#)

# Capstone Project can be done in either two terms or three terms (after prep term)

## Two Terms:

- Term 1: BMI 581 – Project development, submit IRB paperwork if necessary, data collection, begin analysis, writing (3.0 credits)
- Term 2: BMI 581 – Complete analysis, finalize write-up, obtain final approval (3.0 credits)

## Three Terms:

- Term 1: BMI 581 - Project development, submit OHSU Institutional Review Board (IRB) paperwork if necessary (1.0 credit),
- Term 2: BMI 581 - Project work (e.g., development of system, data collection) and draft of write-up (3.0 credits),
- Term 3: BMI 581 – Finalize write-up, obtain final approval (2.0 credits).

# Project Development:

- The project outline should contain the essential details of the proposed work
- Project outlines must be approved by the OHSU (IRB) if the project will use human subjects or clinical data in any way.
  - Many informatics projects will be exempt from full IRB review. Students must apply to IRB for the exemption. Research with human subjects that is not approved by the IRB constitutes scientific misconduct and is subject to disciplinary action. The student is responsible for obtaining IRB approval. Work with your mentor on this process. IRB Forms are [here](#).
  - This process should be started as early as possible during the first term of capstone work. Work closely with your mentor throughout the process.

# Data Collection and Analysis

- The student will continue with data collection and analysis and continue to work on their write-up under the supervision of the capstone advisor.
- It is strongly recommended that the student and the advisor meet every **one to two weeks**.

# Complete the project and submit a final write-up

- Minimum of 30 pages including charts, graphs, tables, etc., is recommended OR a publishable manuscript. This is submitted to the Capstone Advisor for approval.
- The student will make any corrections requested by the Capstone Advisor. Follow SOM guidelines for document formatting requirements (see the [\*SOM Guidelines and Regulations for Completion of Master's and PhD\*](#) ). The *SOM Guidelines* include a sample title page.

# Final Continued:

- Students must submit a completed Document Submission Form to [ethesis@ohsu.edu](mailto:ethesis@ohsu.edu). ***No later than three before the last day of the term.*** Once signed by the librarian, they will email it to the Office of Graduate Studies (with a copy to the Education Coordinator)



# Thesis

- BMI 503
- 55 credits
- Original Scientific work
- Three to 4 terms
- Thirty page research paper deliverable



This is a good option for students who want to continue in academia. This is an in-depth academic research paper which will include two public defenses.

# Pre-thesis preparation - Summer

- Must complete 18 credits before beginning the 4-term process
- Review *MS Student Learning Objectives (SLOs)* on [Student Resources](#) page
- Choose a thesis mentor
- Submit [Mentor Assignment Form](#)
- Review *DMICE Thesis Requirements* on website (see [Student Resources](#) page)
- Review [past theses](#) on OHSU Library website
- Submit 1-2 page outline of project (include study design, plan for the work, anticipated results)

# Forming your TAC

- Review *Thesis Advisory Committee (TAC) Guidelines* on the [Student Forms tab](#):
- Form your TAC
  - If you're not sure who should be on your TAC, speak to your advisor
  - Review [Faculty Research Interests](#) document
  - Minimum of 3 members

# Forming your TAC (cont.)

- Name your TAC (cont.)
  - At least 2 members must be on **SOM Graduate Faculty** (not the same as OHSU Faculty)
  - At least 2 members (including Chair) must have TAC experience
  - May have 1 outside member (non-Graduate Faculty or non-OHSU). Requires additional paperwork.
  - Thesis Mentor may be the Chair
- Submit *Request for Thesis Advisory Committee* [form](#)
- Register for BMI 503 Thesis (to develop specific aims)

# Deciding on a final deliverable

- Option 1: traditional research paper
- Option 2: one manuscript *in publishable format*
  - Students are encouraged to *submit* prior to graduation (though not required)
  - Does not have to be *accepted* prior to graduation
  - See “Thesis/Dissertation as Manuscript Option” document on [Student Resources](#) page of DMICE website

# Deciding on a final deliverable (cont.)

If final deliverable is a **manuscript** in publishable format:

- You will have 2 versions; 1 to submit to journal, 1 to submit to OHSU as final deliverable
- Follow guidelines of the journal of choice
- Your journal may limit number of references
- Each journal has its own specifications for Appendices, Tables, Illustrations, Abbreviations, Typing
- Review [Thesis/Dissertation as Manuscript Option](#) on Student Resources page to “package” your manuscript for OHSU
  - Methods, Results and Discussion chapters must be expanded for final submission to OHSU.
  - Include **all** references used.

# First term of BMI 503 Thesis - Fall

- DMICE recommends having a TAC meeting at least once every quarter; SOM requires **ONCE every 6 months**
- Schedule 1 1/2 hours for first TAC meeting early in the term
- Prepare 4 or 5 slides, including Slide 1 Template (see next slide)
- Present current state of your research
- Purpose of meeting is to obtain input from Committee as you develop your proposal
- Complete *TAC/DAC Meeting Summary* [Form](#) after the meeting
- Meet with advisor regularly for remainder of term

# First term of BMI 503 Thesis

## First TAC Meeting Slide 1 Template

- Introductions (if needed)
- Present 4-5 slides outlining current status of your research
- Summarize literature review
- Identify gaps in the research
- Suggest possible research questions
- Obtain feedback from Committee regarding possible research questions
- Obtain feedback from Committee regarding possible specific aims (need 2)
- Obtain additional feedback to help you develop your proposal

## First term of BMI 503 Thesis (cont.)

Begin work on your proposal

- Include:

- Introduction

- Background

- Specific Aims

- See *Guidelines for completion of degree Master's with thesis*, and [Guidelines for preparation of dissertation and thesis](#)

## First term of BMI 503 Thesis

- Complete development and write up of proposal
  - Methods
  - Limitations
  - Anticipated Results
  - Bibliography

# First term of BMI 503 Thesis

- Begin process to obtain [IRB approval](#) or exemption: The “PI” you must name on the form is your thesis mentor.
- Schedule pre-defense and public defense
- Hold pre-defense meeting with Committee (this serves as a TAC meeting) . Complete TAC Meeting Summary [Form](#). TAC form should be submitted via link on form.
- Proprietary information? If so, complete *Step 1 (“Go/No Go”) Form* on [Forms](#) page of website if you do not want to record. All of your Committee members must attend in person with this option (outside of COVID).
- Defend proposal

## Second term of BMI 503 Thesis - Spring

- Research, data collection, data synthesis, writing
- Meet with advisor regularly
- Meet with TAC at least once to present current status of research (with slides)
- Complete TAC Meeting Summary [Form](#)
- Log into SIS and Apply to Graduate

## Third term of BMI 503 Thesis - Spring

- Meet with advisor regularly
- Send draft of write up to committee early in the term
- Schedule pre-defense (TAC meeting) and public defense
- Submit [\*Request for Oral Examination\*](#) in Smartsheet 30 days before public defense

## Third term of BMI 503 Thesis (cont.)

Prepare the thesis per [\*SOM Guidelines and Requirements\*](#). Include:

- Introduction (includes Background and Specific Aims)
- Methods
- Results
- Discussion (includes Limitations)
- Summary and Conclusions
- Areas for future research
- Bibliography
- Appendices

## Third term of BMI 503 Thesis (cont.)

Formatting and citation:

- See *SOM Guidelines and Regulations* [Section 4 for formatting rules](#). Be consistent.
- Choose one citation style and be consistent
  - Vancouver (recommended for informatics)
  - APA
  - MLA
- Examples of [Vancouver style](#)
- Online Writing Lab (OWL) at [Purdue](#)

## Third term of BMI 503 Thesis (cont.)

### Form Oral Examination Committee

- At least one member must be from outside student's program
- May be the same members as on TAC if all requirements are met
- Thesis mentor may **not** be Chair of this Committee

## Third term of BMI 503 Thesis (cont.)

- Send slides and write up to committee two weeks before pre-defense
- Pre-defense meeting with committee
  - This is a timed, rehearsed dry-run of public defense (40 minutes)
- Public thesis defense
- Followed by 30-minute oral examination by Committee
- Submit signed Oral Examination Certification in Smartsheet within 48 hours of defense
- Submit SOM Certificate of Approval in Smartsheet

## If you need a fourth term of thesis...

- Continue to register for 1 credit of BMI 503 Thesis each term until you turn in final writeup
- If you do not submit write up 6 months after defending, you will need to re-defend

# Submit final documents

- SOM Certificate of Approval (smartsheet that can be found [here](#))
- PDF of thesis to:
  - [ethesis@ohsu.edu](mailto:ethesis@ohsu.edu) (library)
  - Education Coordinator
- Document Submission Form (which includes the Electronic permission form) to [ethesis@ohsu.edu](mailto:ethesis@ohsu.edu)
- Electronic Publication Permission Form will clarify if you want:
  - Immediate Release, or
  - Delayed Release (3 years)

Questions?

