

Burnett School of Biomedical Sciences (BSBS) Honors-in-the Major (HIM) FAQ

Please consult the Honors Undergraduate Thesis (HUT) Handbook from the Burnett Honors College for a comprehensive description of the HUT program. This FAQ addresses issues related to the BSBS HIM program.

Both HIM and Interdisciplinary Research are tracks within the HUT program. HIM is used for BSBS-based projects related to biomedical research or biotechnology. If necessary, the relevance of the proposed HIM topic to biomedical science or biotechnology will be decided on a case-by-case basis by the HIM coordinator for BSBS. Projects with no appreciable link to biology will not be accepted. Topics related to conservation biology are better suited for Interdisciplinary Research in the Biology Department. Interdisciplinary Research is for projects conducted with a non-BSBS faculty mentor and may be unrelated to your BSBS major. If you enroll in Interdisciplinary Research, you will follow the Honors Thesis guidelines from your faculty mentor's home Department. Interdisciplinary Research does not require the participation of BSBS faculty members, and it will not count as a BSBS restricted elective.

Note: BSBS thesis committee requirements differ from the campus-wide HUT program. BSBS students are required to have at least 3 faculty members on their committee, including one outside member. See the “Thesis Committee” and “Paperwork” sections below for more details.

COURSEWORK AND EXPECTATIONS

What is the BSBS HIM program?

HIM is structured like a MS program: participating students conduct research, summarize their results in a written thesis, and defend their thesis in an oral presentation to their faculty committee and the general public. Successful completion of the HUT program will be recognized with the award of an Honors medallion upon graduation and Honors distinctions noted on your transcript and diploma. The Burnett Honors College and UCF library will also maintain an accessible electronic copy of your thesis.

Can I begin working on a HIM project before enrolling in HIM?

Yes. It often takes a substantial amount of time and effort to generate a body of work for the HIM thesis. You may feel more comfortable committing to the HIM program if you are already proficient with the requisite lab techniques and have already generated data in support of the project.

Do I need to be in the Burnett Honors College to enroll in HUT?

No. The HUT program allows non-Honors students to join the Burnett Honors College. To do so, you must meet the following eligibility requirements:

- 60 completed hours of college credit
- 12 completed upper division hours of college credit
- UCF GPA of 3.5 or above
- At least 2 semesters remaining prior to graduation

Do I need to start the HUT program in the fall term?

No. You can enroll in MCB 4903H Honors Directed Readings I, the first HUT course, in fall, spring, or summer C term. The Coordinator of Honors Research enrolls all students.

Do I need to complete the HUT coursework in 2 consecutive semesters?

No. You must complete one semester of MCB 4903H Honors Directed Readings I and a second semester of MCB 4970H Honors Undergraduate Thesis I, but enrollment in the 2 courses can be discontinuous.

Can I work on my HUT project for more than 2 semesters?

Yes. If you need additional time to complete your thesis, you can enroll for up to 4 semesters of HUT. In addition to the required MCB 4903H Honors Directed Readings I and MCB 4970H Honors Undergraduate Thesis I, you can enroll in Honors Directed Readings II (MCB 4904H) and/or Honors Undergraduate Thesis II (MCB 4970H). The first two required courses are for 3 credit hours each, but Honors Directed Readings II and Honors Undergraduate Thesis II can be taken for 1 or 3 credit hours. You can use the PCB designation for course registration (i.e., PCB 4903H) rather than MCB. You can also work on your project when you are not enrolled in a HUT class.

What are the goals for each HUT course?

Honors Directed Readings and Honors Undergraduate Thesis are campus-wide designations for the two classes which comprise the HUT program.

For MCB 4903H Honors Directed Readings I, you will begin working on a research project in your host lab. You should become familiar with the background information and experimental procedures relevant to your project. You will form your thesis committee within six weeks of beginning Directed Readings I and provide the Burnett Honors College with a list of your committee members. The committee should be given a copy of your thesis proposal no later than 3 weeks before the last day of classes. The thesis proposal should be an original work written by the student without the help of generative AI. Additional requirements related to the campus-wide HUT program must be completed as well (HUT Orientation, workshop attendance, submission of the thesis proposal with a signed cover page to the Office of Honors Research, and, possibly, registration for the next HUT course).

For MCB 4904H Honors Directed Readings II, you will continue to work on your HUT project. Directed Readings II simply provides extra time to become familiar with the relevant literature and to generate extra data before enrolling in Honors Thesis. The thesis proposal may be submitted to your thesis committee and Office of Honors Research during Honors Directed Readings II if you enroll for this class. If you know it will take at least 3 semesters to complete your HUT project, take Directed Readings II for the second semester. Workshop attendance is an additional, campus-wide HUT program requirement.

For MCB 4970H Honors Undergraduate Thesis I, you will complete your project, write your thesis, and hold an oral defense of the thesis. Most students will continue to generate data for their project during the Honors Thesis semester. The date of the oral defense should be established as soon as possible: faculty members have very busy schedules, so it may be difficult to pinpoint a time/date when everyone is available for the defense. You will also need to provide your committee with a copy of your written thesis no later than 2 weeks before the defense date. The final thesis should be an original work written by the student without the help of generative AI. The thesis should be complete, but committee members may request changes to the written thesis after the oral defense. The final written thesis will then be approved by the thesis committee and uploaded to STARS (Showcase of Text, Archives, Research, and Scholarship). A signed Thesis Approval Form will be sent to the Office of Honors Research. Additional

requirements related to the campus-wide HUT program must be completed as well (thesis format review, plagiarism review, and workshop attendance).

If you are not ready to defend your thesis at the end of Honors Undergraduate Thesis I, you can still enroll in Honors Undergraduate Thesis II. In this semester, you will continue to work on your project and will complete both the written thesis and oral defense in this term. All other requirements of Honors Undergraduate Thesis I, including workshop attendance, will also be completed this term. Note that workshop attendance is required for Honors Thesis I, even if you continue with Honors Thesis II.

Can I participate in other UCF research programs while enrolled in HUT?

Yes. HUT students are encouraged to participate in the Student Scholar Symposium (<https://researchweek.ucf.edu/symposium/>) and to publish their findings in The Pegasus Review: UCF Undergraduate Research Journal (<https://stars.library.ucf.edu/urj/>). HUT students can also participate in Academic Advancement Programs (<https://aap.ucf.edu/programs/>), the BSBS Program for Undergraduate Research Experience (<https://med.ucf.edu/biomed/undergraduate-programs/student-research/mm-pure/>), and other curricular or extracurricular student programs.

Can the HIM project substitute for a BSBS restricted elective?

Yes. Completion of the HIM program counts as a restricted elective for Burnett School majors. However, note that only one “Research-related restricted elective” (i.e., PURE, PILOT, GEAR, or HIM) will be allowed to substitute for a regular restricted elective credit. Students can enroll in as many of these programs/courses as they wish, but only one will be allowed to substitute for a regular restricted elective credit. The additional research-related credits may count as part of the 120 required for graduation or as upper division 48-hour requirement.

THE BSBS THESIS COMMITTEE

What is the composition of my thesis committee?

Your HIM committee will consist of your thesis chair and at least two additional faculty members. Two members must be faculty with a primary appointment in the Burnett School of Biomedical Sciences, and at least one faculty member must be from a unit outside of your chair’s home Division. You may ask more than three faculty members to sit on your HIM committee if you think their areas of expertise are a good match for your project. The maximum size of a thesis committee is five members.

Thesis committee members must hold an appointment at UCF. At least two members must have a terminal degree (Ph.D. or M.D.); one member may have a M.S. degree. Individuals who do not meet these qualifications may, on a case-by-case basis, sit on a thesis committee but will not count toward the minimum three-member committee.

If two of your committee members are related or affiliated with the same lab, you will need a fourth faculty member on your committee. There is a potential conflict of interest when these faculty members serve on the same committee, as they may act as a single entity rather than two independent voices. A fourth faculty member will ensure there are at least three independent voices on your committee.

BSBS is divided into five Divisions: Molecular Microbiology, Immunity and Pathogenesis, Metabolic and Cardiovascular, Cancer, and Neuroscience. Your “outside” committee member can be from any

BSBS Division other than your chair's home Division. The outside member can also be from a unit distinct from the BSBS (e.g., Biology Department, Chemistry Department, Physics Department, College of Nursing, CREOL, NanoScience Technology Center, etc.). Note that the Clinical Sciences, Population Health Sciences, Medicine, and Medical Education units of the College of Medicine are not part of BSBS, so faculty from these units can serve as the "outside" committee member.

How do I identify a thesis chair?

The faculty mentor who directly supervises your research project will be your thesis chair. A thesis chair or co-chair must be full-time (regular) faculty member at UCF.

How do I identify the other members of my thesis committee?

Your thesis committee should ideally consist of faculty members with expertise in your area of research. Consult your faculty mentor for suggested thesis committee members. From coursework and personal interactions, you may also have an idea of which faculty members would be a good fit for your committee. However, you should receive the approval of your mentor before asking any faculty member to sit on your committee.

What is the role of the thesis committee?

The thesis committee can strengthen HIM projects by providing additional input, insight, and guidance. Committee members will have expertise in the HIM topic but may also contribute alternative perspectives to the project. Students should actively consult their committee members on project developments as well as the structure of the thesis proposal and thesis defense. Committee members may require changes to the thesis proposal and final thesis before approving those documents; this possibility may be minimized through ongoing interactions with committee members and meeting the deadlines for submission of the thesis proposal and final thesis.

Can my thesis chair be a faculty member who is not part of BSBS?

If your thesis project is related to biomedical science or biotechnology but your faculty mentor does not have a primary appointment in the Burnett School of Biomedical Sciences, you will need to identify a BSBS faculty member to co-chair your HIM committee. Paperwork that requires the chair signature (registration forms, etc.) will also be signed by the co-chair. Those forms can be found [here](#). Since your primary faculty mentor is outside the BSBS, the third member of your HIM committee may be from any division within BSBS. Note that the Clinical Sciences, Population Health Sciences, Medicine, and Medical Education units of the College of Medicine are not part of BSBS; you will need to identify a BSBS co-chair if your primary mentor holds an appointment in one of these units.

Can my thesis chair be a non-tenure track faculty member of the BSBS?

Non-tenure track faculty who hold a Ph.D. or M.D. may be eligible to serve as a thesis chair. Due to the time commitment required for effective mentoring of HIM students, a non-tenure track BSBS faculty member can only serve as chair of two concurrent HIM projects.

HIM projects with non-tenure track faculty members usually do not involve benchwork. However, be aware that a literature review is not sufficient for HIM. The HIM project must provide some new insight or advance for the field. A literature review does not meet this standard, whereas a meta-analysis of the literature would be appropriate.

Can I complete my thesis without the full 3-member committee, or without an outside committee member?

No. The BSBS HUT Liaison must approve the final thesis and will not sign off on projects that did not involve a proper committee.

THE THESIS PROJECT

Your project must have some connection to a BSBS degree program. However, this does not necessarily require research at the bench. BSBS HIM students have, for example, worked on topics related to medical anthropology or art therapy in a clinical setting. These projects generally involve a co-chair from another UCF unit with expertise in the topic. If you plan to pursue an HIM thesis using something other than a meta-analysis or molecular biology techniques in the lab of a research-active BSBS faculty member, you should first seek approval from the BSBS HUT Liaison.

Most HIM projects involve benchwork, but meta-analysis projects are also acceptable. Both types of projects are considered below.

THESIS PROJECTS INVOLVING BENCHWORK

Do I need to design my own project?

No. You will most likely be assigned a project by your faculty mentor. The ability to recognize an outstanding question in the field and to design a series of well-controlled experiments to address that question is generally expected for the completion of a Ph.D. For the HIM thesis, you are expected to work with your faculty mentor to develop and execute a series of experiments that will address an unresolved issue in the field. Although the HIM is patterned after MS programs, you will not be expected to generate the same quantity of data that would constitute a MS thesis. You will, however, need to produce a body of work that leads to a well-justified conclusion and provides some advance for the field.

Can I design my own project?

Yes. However, BSBS faculty mentors spend considerable energy training HIM students. In return for the time and resources devoted to their students, a faculty mentor expects some contribution to the main focus of their research program. Undergraduate researchers who want to study a problem that is not directly related to a faculty member's research program will therefore find it difficult to locate a mentor. In general, HIM students who design their own projects have already spent some time in their host lab and have a good working knowledge of what research questions are important to the lab.

How do I identify a faculty mentor who will sponsor my project?

Most BSBS faculty members sponsor undergraduate research projects, and most will also sponsor a HIM project. However, participation in the HIM program does not guarantee you a research project. You will need to identify a faculty mentor on your own. Due to the extreme demand for undergraduate research projects, locating a faculty mentor may actually be one of the more difficult tasks of the HIM program. The BSBS Undergraduate Research FAQ provides suggestions on how to identify a faculty mentor. The Office of Undergraduate Research (<https://academicsuccess.ucf.edu/our/>) also provides advice and workshops on how to secure a research position.

THESIS PROJECTS INVOLVING META-ANALYSIS

What is a meta-analysis?

A meta-analysis evaluates several studies on a single topic to reach a new conclusion from the aggregate data. It applies statistical methods to a collection of studies in order to provide new insights on the research topic. A meta-analysis is distinct from a literature review, which does not answer novel questions and, thus, does not meet the criterion for a HUT project.

Do I need to design my own meta-analysis?

Yes. Most faculty members are not actively involved with meta-analysis studies. Students wishing to conduct a meta-analysis thesis should therefore pick their own research topic and hypothesis, preferably before contacting potential mentors. Faculty who supervise a meta-analysis thesis will assist the student with study design and statistical analysis but will not initiate the project.

How do I identify a mentor who will sponsor my meta-analysis project?

HIM students who design meta-analysis projects usually partner with a non-tenure track BSBS faculty member or have a co-chair outside BSBS. Faculty members may only sponsor two meta-analysis studies at a time because these projects, like projects involving benchwork, require substantial input from the faculty mentor.

Faculty are likely to sponsor students with meta-analysis projects that meet the following criteria:

- Project idea is already in place
- Project falls within their area of expertise
- Student understands the literature and has written a paragraph describing the project
- Student is familiar with the research process
 - Students are encouraged to complete MCB 3903 before a meta-analysis thesis
- Student has completed a statistics course, preferably Biostatistics
- Student has three or more semesters before graduation

BSBS THESIS PROPOSAL AND ORAL DEFENSE

What is the format for the thesis proposal?

An example of the BSBS thesis proposal format can be found [here](#).

What is expected for the thesis defense, and how is it run?

The HUT program is organized like a MS program, culminating in the oral defense of a written thesis. At a typical thesis defense, your mentor will briefly introduce you and the general topic you work on. You will then give a 40-50 minute PowerPoint presentation of your project. This presentation should contain sufficient background information to demonstrate your knowledge of the field and ensure your audience can understand the value of your work. This introduction should provide context for the HUT project and should logically flow to a clear statement of the hypothesis and/or objective of the project. Uncommon research methods should be described, either in a distinct section after the introduction or as a preface to data presentation involving that specific technique. Your data should be presented in a logical manner that addresses your overall hypothesis/goal. You do not need to present your data in chronological order, and you do not need to show every experiment you performed. Instead, you need

to organize the data to tell the story of your project. For each data slide, you should (i) give a rationale for the experiment; (ii) mention any experimental detail needed to understand the data; (iii) describe the result; and (iv) provide a conclusion. At the end of the data presentation, you should summarize the overall project and consider future directions for the work.

The thesis defense is open and advertised to the general public, which generally means UCF students and friends/family of the HUT candidate. Questions from the audience can be fielded during the presentation or at the conclusion of the talk; this is the prerogative of the speaker. After questions from the general audience have concluded, all non-faculty members will be asked to leave. Questions from the thesis committee will then occur in a closed door session. Faculty members who are not part of the thesis committee may ask questions during the public presentation or may stay for the closed door session. When questions from the thesis committee have concluded, the HUT candidate will be asked to briefly step outside the room. The thesis committee will then discuss the strengths and weaknesses of the candidate and provide recommendations to the thesis chair that will be relayed to the student upon his/her return to the room. The purpose of this evaluation is to assess the quality of the HUT thesis and to provide constructive criticism for improvement of the HUT candidate's thesis and communication skills. At this point, the student may be asked to make further revisions to the thesis before its submission to the Office of Honors Research.

PAPERWORK

Who is HUT Liaison for the Burnett School of Biomedical Sciences?

Ken Teter, Ph.D.

Office: Biomolecular Research Annex, room 142

Phone: 407-882-2247

Email: Kenneth.Teter@ucf.edu

How do I get the HUT paperwork signed by the BSBS HUT Liaison?

You will need to have all relevant committee member signatures on your paperwork before obtaining Dr. Teter's signature. He will be the last person to sign the forms before they are forwarded to the Burnett Honors College. If you use DropboxSign or DocuSign, be sure to order the list of signature requests appropriately.

Note: The HUT Liaison will not provide the final signature for a thesis proposal or thesis defense that does not include a full 3-member committee.

The Honors College requires electronic signatures for their paperwork. This can be accomplished by using DropboxSign, DocuSign, or pdfs with signature boxes.

How do I apply for the HUT scholarship?

HUT scholarships are available on a competitive basis each fall and spring semester. Applications are reviewed and ranked by a panel of three BSBS faculty members. However, due to the workload involved, you will not receive comments on your application. Applications are usually due in the middle of the semester; specific deadlines are announced each semester by the Burnett Honors College.

Burnett School of Biomedical Sciences Honors Undergraduate Thesis (HUT) Guidelines for Meta-Analysis Projects

A meta-analysis evaluates several studies on a single topic to reach a new conclusion from the aggregate data. It applies statistical methods to a collection of studies in order to provide new insights on the research topic. A meta-analysis is distinct from a literature review, which does not answer novel questions and, thus, does not meet the criterion for a HUT project.

Acceptance/Registration for an Honors-in-the-Major (HIM) Meta-Analysis Project

To be accepted and register for a meta-analysis HIM project, students must:

1. Be accepted to the HUT program by the Burnett Honors College
2. Read the BSBS HUT FAQ to become familiar with BSBS-specific issues related to the HUT program
3. Identify a Thesis chair
 - Although the HUT can be completed in two semesters, many HUT projects take three or more semesters to complete. For this reason, many faculty members will only support meta-analysis projects for students who have at least three regular semesters left before graduation (i.e., Fall, Spring, and Summer C).
 - Students are strongly encouraged to take MCB 3903 Explorations in Biomedical Science, BSC 3403 Quantitative Biological Methods, and/or STA 4173 Biostatistical Methods before starting a meta-analysis project. These classes will provide foundational knowledge in the scientific method that will be directly applicable to the HUT.
 - To qualify as an HIM project, the Thesis chair or co-chair must be a BSBS faculty member.
 - If there is a BSBS co-chair, that person will sign or co-sign all HUT paperwork.
 - All materials submitted to the Thesis chair must also be submitted to the co-chair.
4. Submit a written summary of the research topic and objectives to the potential Thesis chair
 - BSBS faculty will not identify a research topic or design a study for prospective HUT students. The role of the Thesis chair and committee for meta-analysis projects is to guide the student through the execution of a project that was designed by the student.
 - Based on the quality of the summary, faculty may ask for a revised research plan or decline to support the proposed project.

Execution of the HIM project

The HUT requires completion of MCB 4903H Honors Directed Readings I and MCB 4970H Honors Undergraduate Thesis I. If extra time is required to work on the thesis, students can also enroll in Honors Directed Readings II (MCB 4904H) and/or Honors Undergraduate Thesis II (MCB 4970H). Students can also work on the project when they are not enrolled in a HUT class.

To complete Directed Readings I, students must:

- Form a Thesis Committee and complete the committee member information form.
 - The form must be submitted to the Honors College by the 6th Friday of the term.
- Write a Thesis Proposal that is reviewed and approved by the Thesis Committee.
 - The committee should receive the proposal at least 3 weeks before the last day of classes.
 - The proposal and signed cover page must be submitted to the Honors College.
Check with the Honors College for the submission deadline.
 - If the committee does not approve the proposal, the student will either withdraw from the program or, at the discretion of the committee, enroll in Directed Readings II.
- Attend and participate in at least one HUT-approved support workshop.
- Complete mentor-specific requirements as outlined in the HUT syllabus for the student.
 - These may include completion of the OUR Research Roadmap, CITI training, or modules related to literature searches, technical writing, statistical analysis, etc.

To complete Thesis I, students must:

- Attend and participate in at least one HUT-approved support workshop.
- Complete mentor-specific requirements as outlined in the HUT syllabus for the student.
- Complete the project, write the thesis, and hold an oral defense of the thesis.
 - The thesis should be submitted to the committee at least 2 weeks before the defense.
Committee members may ask for revisions to the final thesis.
 - A format review must be completed by the Honors College Thesis Editor.
 - A notice of defense should be submitted to the Honors College 1 week before the defense.
 - Submit the Thesis approval form to the Honors College.
 - Submit the final thesis to the UCF library.

Failure to meet the milestones for the Directed Readings or Thesis courses may impact the HUT grade and completion of the HUT program.