# Part 2 Application *for* Science, Technology, Engineering, Mathematics (STEM), and Social Sciences Theses

First complete Part 1. Upload this file as part of Part 2 in the Scholars Thesis Submittal System at <https://scholarsthesis.tamu.edu>.

## Section 1: Contact Information

### Student Applicant

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| James |  | D. |  | Leaverton |  | 827006534 |
| *First Name* |  | *Middle Name* |  | *Last Name* |  | *9-digit UIN* |

Type “X” in the appropriate section below to indicate your thesis type:

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| Type an “X” for Team Thesis. |  | X |
| Team Thesis |  | Individual Thesis |

### Faculty Advisor(s)

#### Primary Advisor:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Thomas E. |  | | | Lacy |  | | Mechanical Engineering | |  | | telacyjr@tamu.edu | |
| *First Name  (and Middle Initial)* | |  | *Last Name* | |  | *Department* | |  | | *Email Address* | |

#### Secondary Advisor (if applicable):

|  |  |  |  |  |  |  |  |  |  |  |  |  |
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| *First Name  (and Middle Initial)* | |  | *Last Name* | |  | *Department* | |  | | *Email Address* | |

#### Tertiary Advisor (if applicable):

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| *First Name  (and Middle Initial)* | |  | *Last Name* | |  | *Department* | |  | | *Email Address* | |

## Section 2: Proposal

### Section 2: Proposal – Project Summary

Project Summary Instructions:

**IN LESS THAN 200 WORDS,** briefly describe what you propose to do and how you propose to do it. The project summary should contain:

1. A statement of your research question.
2. Justification and importance of your research topic(s).
3. Make sure you understand the previous research that has been done in your field. How is your project(s) different or how does it/do they build on previous research? Be specific.
4. Expected outcome(s).

Proposal Title:

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| Computational Simulation of Hypervelocity Sabot Simulation |

Project Summary:

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| In the hypervelocity testing community, the ability to accurately predict the degree of aerodynamic “sabot separation” given testing shot parameters is highly valuable. Efficiently discarding the sabot package is vital, as minimizing the pressure (the main parameter for sabot separation given a constant projectile velocity) will maximize the velocity of the test, and minimize aerodynamic flashes that may disrupt instrumentation documenting the test, such as high-speed cameras. A computational simulation to predict the degree of sabot separation is in development. The accuracy of this program will be quantified using experimental data gathered from the Texas A&M Hypervelocity Impact Laboratory’s 2 stage light gas gun. In the past, attempts have been made to computationally characterize the sabot discard event, though these attempts focused on projectile velocity, rather than hypervelocity. This project will result in a developed computational simulation software capable of predicting sabot separation given testing shot parameters. The program will then be used to develop models that will be verified using experimental data. |

### Section 2: Proposal – Introduction

Introduction Instructions:

**IN A FEW HUNDRED WORDS USING PARAGRAPHS,** expand and describe your common research theme and why it is an important object of scholarly inquiry in the context of your research field. The Introduction usually requires a discussion of your literature review and a summary of the pertinent previous research in your field that shows the relationship between your project(s) and the material you cite. In the Introduction, be sure that you are:

* Using in-text citations and that you are citing the material correctly according to your citation style guide. Failure to use appropriate in-text citations will result in your proposal being returned to you for revisions.
* Demonstrating that you have surveyed the state of knowledge in your research area and that you understand how your outcomes will make an important contribution to your field.
* Introducing your thesis statement.

Introduction:

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| In the hypervelocity testing process, the separation of the projectile carrying package from the projectile itself is called sabot separation. In most two stage light gas guns, the main hypervelocity testing instrument, the sabot must be separated by either centrifugal force (from a rifled flight tube) or aerodynamic forces (using drag to separate the encompassing parts of the sabot. Aerodynamic forces are the most common method of completing this separation (Swift & Strange, 1987).  As the ability to accurately predict the degree of sabot separation is highly valuable to the ballistics community, many papers have already been written on this topic. In 1980, Siegelman, Crimi, & Schmidt, working in the US Army’s Ballistic Research Laboratory, discussed a few possible engineering models for estimating the aerodynamic forces on a sabot segment. This discussion used velocities in the low hypervelocity range (3-6 km/s) along with atmospheric pressure and stabilizing fins on the projectile. Their findings were verified by wind tunnel experimental data, along with transient analysis of the discard process using X-Ray photography.  In 2001, Cayzac, Carette, & Alziary attempted to model unsteady aerodynamic sabot separation in intermediate ballistics using 2D Euler equations and computation fluid dynamics for flow field analysis. Their findings included validation of their numerical techniques with experimental data. However, their ballistic testing was conducted on a 44 mm barrel using a projectile package with a mass of 0.475 kg, leading to an exit muzzle velocity of only 1.43 km/s.  Hypervelocity sabot separation induces different parameters than the previous testing. Due to the extreme velocities, atmospheric pressure cannot be used to conduct the discard process. This introduces the variable of adjusted nitrogen backfill pressure, currently used in the Texas A&M Hypervelocity Impact Laboratory. A program to computationally simulate the hypervelocity sabot separation process is in development, using the methodology of previous sabot separation studies. Models extracted from the program’s parameters will then be reconciled with experimental separation data to quantify the accuracy and breadth of the computational ability of the simulator. **This study aims to investigate the accuracy modelling sabot separation using numerical techniques, and if these predictions be verified using experimental data.** |

### Section 2: Proposal – Objective(s)/Goal(s)

Objective(s)/Goal(s) Instructions:

**1-2 SENTENCES,** define your research objective(s) and/or goal(s) clearly and succinctly. State your hypothesis or research question so that a reader from any research background can understand what it is you are trying to accomplish.

Do not explain your methods in this section. Explain your anticipated outcomes and what you hope to achieve with your project. Here you will describe the purpose, scope, rationale, and motivation for this research. Articulate how your research contributes to the ongoing discussion in your research field.

Objective(s)/ Goal(s):

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| The goal of this project is to develop computational software to accurately predict sabot separation, an integral part of successful hypervelocity impact testing. This can be distributed throughout the hypervelocity community, saving large amounts of resources in calibration of sabot separation. Attempts at modelling these events have already been made, but this program will build on previous work and present a user-friendly solution to dealing with complex simulation techniques. |

### Section 2: Proposal – Methodology

Methodology Instructions:

**IN ONE SHORT PARAGRAPH,** suggest how you propose to tackle your research question, what research methodologies you will employ. In this section, you should describe the approach, techniques, and/or procedures you will take to complete your project. Also describe the resources you need to do your research (e.g., laboratory, library or other space, documents or books you need to reference, databases you need access to) and people you will interact with during the research process. This section should align with the steps you describe in your customized timeline on the following pages.

Methodology:

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| This computational software will be developed using numerical techniques following existing papers written on the subject, in conjunction with Physics Applications International, the vendor for the Texas A&M University Hypervelocity Impact Laboratory. Experimental data will be gathered by using the already gathered projectile velocity, backfill pressure, and other shot parameters relevant to the software. Experimental sabot separation will then be characterized by measuring the positions that sabot segments impacted the stripping ring separating the blast tank (where the sabot separation occurs) and the target tank (where the projectile impacts the target of interest). This data will then be used to reconcile the models developed with the computational software. |

### Section 2: Proposal – References/Works Cited

References/ Work Cited Instructions:

Include a list of references for ALL the literature cited in the text of your proposal. This might also include your literature review and text that you intend to consult. Choose a citation style appropriate for your field. At least 4-5 references are expected.

References/ Work Cited:

|  |
| --- |
| Swift, H. F. and Strange, D. E. “Analysis of Sabot Operation” ADPA Ballistics Symposium, Orlando, FL, USA October 1985  Swift, H. F. and Strange, D. E. “Sabot Discard Technology” Dayton, OH, USA October 1987  Plassard, F., Mespoulet, J., & Hereil, P. (2011, May). Analysis of a single stage compressed gas launcher behaviour: from breech opening to sabot separation. In *8th European LS-DYNA Users Conference* (pp. 1-11).  Denny, M. (2013). Gas gun dynamics. *European Journal of Physics*, *34*(5), 1327.  Cayzac, R., Carette, E., & Alziary de Roquefort, T. (2001, May). Intermediate ballistics unsteady sabot separation: first computations and validations. In *19th International Symposium of Ballistics* (pp. 297-305).  Siegelman, D., Crimi, P., & Schmidt, E. (1980, August). Projectile/sabot discard aerodynamics. In *6th Atmospheric Flight Mechanics Conference* (p. 1588).  F. Lesage and M.J. Raw, “Navier-Stokes Computation of the Aerodynamics of Symmetric Sabot Separation”, 13th International Symposium on Ballistics, Stockholm, Sweden, (1992).  L.Yean-Kai, T.Chang-Hsien, H.Wen-Hu and L.M.Fulong, “High-Resolution Navier-Stokes Computations of a Sabot Separating from a Gun-Lunched Projectile with Turbulence Model”, 14th International Symposium on Ballistics, Quebec, Canada, (1993).  A. Mikhail and K. Heavy, “Sabot Opening Lift Force: Analysis, CFD, and Test”, 38th Aerospace Sciences Meeting & Exhibit, Reno, USA, (2000). |

## Section 3: Research Compliance Acknowledgement

### Section 3: Research Compliance Acknowledgement – Instructions

Research Compliance Acknowledgement Instructions:

Faculty advisors who mentor undergraduates in the URS thesis program are solely responsible for advising and verifying student research compliance, research ethics, and necessary training. Faculty advisors are required to review and approve all aspects of URS applications and final theses, including the student’s Research Compliance Acknowledgement.

Regulatory research committee (IRB and/or IBC and/or IACUC) approval is required **before** research activities involving human subjects, animals, or biohazards can commence. This requirement applies to activities conducted at Texas A&M and to activities at non-Texas A&M facilities and institutions. In both cases, students are responsible for working with Texas A&M’s office of [Research Compliance & Biosafety](https://rcb.tamu.edu) to ensure and document that all Texas A&M compliance obligations are met **before** the research begins. Students and faculty advisors are encouraged to reach out to the appropriate research compliance committee **as early as possible**.

The Research Compliance Acknowledgement section of the URS application is necessary to document the following:

1. Faculty advisor(s) approval of the proposed research
2. Student awareness and action to address any and all compliance issues for research involving human subjects, animals, and biohazards with the office of Research Compliance & Biosafety while conducting research

Resources: Research Compliance & Biosafety

* [Red Flags List](https://rcb.tamu.edu/more/red-flag-list/view)
* [Activities that Require IRB Review](https://rcb.tamu.edu/humansubjects/forms/HRP093SOPActivitiesthatRequireIRBReview.pdf)
* [Contact Information](https://rcb.tamu.edu/more/resourcehub/contactus)

#### Required Research Compliance Acknowledgement

By checking the box below, you are acknowledging the URS Research Compliance Acknowledgement form and certify that all research compliance requirements related to this proposal have been addressed with your faculty advisor(s) prior to submission. If any approvals or training are needed, you agree not to collect any data until approvals have been obtained and required training has been completed. You and your faculty advisor(s) understand that if the scope of the proposed research project changes, those changes must be addressed with the office of [Research Compliance & Biosafety](https://rcb.tamu.edu) prior to implementation.

Type “X” below to acknowledge the above statement:

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| --- |
| X |
| Acknowledge |

Enter your name, UIN, and date to complete your acknowledgement.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| James Leaverton |  | 827006534 |  | 9/14/2020 |
| Name |  | UIN |  | Date |

## Section 4: COVID-19 Contingency Plan

### Section 4: COVID-19 Contingency Plan – Instructions

COVID-19 Contingency Plan Instructions:

Due to COVID-19, students are required to apply with a contingency plan that describes how the URS project will be completed if you are unable to follow the scope of the original project proposal. The purpose of this contingency plan is to help you complete the URS thesis program on time and to fulfill graduation or other program requirements, such as Honors.

Depending on the project, this contingency plan could address, but is not limited to, the following:

* Lack of physical access to research space, data, or other resources
* Limited and/or restricted travel
* Inability to hold in-person meetings
* Partial or incomplete data, trials, experiments, reviews, analyses, design, etc.
* Virtual project completion if moved fully online

Give a detailed description of a contingency plan that will guide you as you plan ahead for potential disruptions and/or unanticipated impacts of COVID-19 on your URS thesis.

COVID-19 Contingency Plan:

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| This project was chosen with the idea that there might be a contingency plan necessary. The project is software development, that can be done anywhere with a computer. The experimental data is gathered when the TAMU HVI lab conducts testing, but only the graduate students need to be there to conduct testing. When most labs shut down due to COVID at the beginning of the pandemic, the TAMU Hypervelocity Impact Lab was deemed to be essential research, and continued operations, though undergraduates were barred from entering the lab in person. The experimental data collection for this project is quite simple, as most of the data is already automatically collected in the testing process for all the current projects that the HVI Lab is conducting. The graduate students can easily gather any extra data and upload it online, meaning that in person research for undergraduates isn’t necessary if there is another increase in COVID cases. |

## Section 5: Timeline

### Section 5: Timeline – Instructions

The Timeline section is meant to help you plan to effectively carry out your research goals over the course of the academic year. In the Timeline section of the application, describe your weekly goals, benchmarks, and deliverables, as if this were a class syllabus. What are your objectives and outcomes? What do you need to do to achieve your objectives and outcomes and when do you need to it? What do you need to do each week to keep yourself on track? Keep in mind the program requirements above as well as the prompts on the following pages that precede each monthly portion of the Timeline.

### Section 5: Timeline – Semesters at a Glance

#### Fall

1. Attend the program orientation (October 12)
2. Attend 1 initial meeting with your assigned thesis reviewer
3. Attend 1 end-of-semester meeting with your assigned thesis reviewer
4. Attend 1 of 4 drop-in resource sessions
5. Complete 1 fall progress report

#### Spring

1. Attend 1 of 4 thesis formatting workshops (January 11, 14, 20, 21)
2. Complete 2 installment submissions
3. Complete 2 spring progress reports
4. Make 1 public presentation and submit 1 presentation report \*
5. Complete the final thesis submission and receive faculty advisor approval

*\* Public presentations can take place in either fall or spring between October 12 and April 12 to meet the April 12 deadline to submit the Public Presentation Report.* ***Note:*** *Students on the Galveston campus are expected to present at the TAMUG Student Research Symposium in late-April and have until April 23 to submit Public Presentation Reports.*

### Section 5: Timeline – Fall 2020 Semester

#### Section 5: Timeline – Fall 2020 Semester – September and October

September and October Instructions:

September and October Goals

Program Requirements

* Finalize any revisions requested by your faculty advisor and/or LAUNCH staff on your program application.
* Attend the program orientation on Oct 12
* Attend the initial meeting with assigned thesis reviewer
* Attend or make plans to attend at least one resource session
* If you are in the LAUNCH University Honors Program and using URS to fulfill your capstone requirement, have you registered for the RESEARCH CAPSTONE section of UGST 497?

Individual Goals

Design your goals as if it were a class syllabus. Think about what you need to accomplish each WEEK and provide as much detail as possible. List assignments and other milestones for yourself, keeping your faculty advisor’s schedule in mind. State days and times you will be meeting with your faculty advisor.

Things to keep in mind as you design your weekly timeline might include:

* If you require research compliance approval and/or other required training: Have you contacted the office of Research Compliance & Biosafety? Do you need to attend a Research Compliance Informational? Are there any trainings you need to complete or schedule?
* Provide a list of dates for when you are contacting and obtaining access to resources you need for your project. Think about scheduling use of laboratory equipment, library or other physical spaces, requesting documents, books, or databases you need to reference, and people you will interact with during your research. Do you need to order anything ahead of time? Do you need to request permission to use any materials or resources for your project (e.g., data, figures, images, etc.).
* Do you have a project notebook?
* What are potential literary sources and appropriate databases you will use throughout the year?
* How is your project different or how does it build on previous research? What previous research in your field will you be including?
* Begin an outline of your thesis (think about your research question and approach, refine your thesis statement).
* Weekly project meetings with faculty advisor: discuss research progress and written thesis content.
* Discuss when and where you will present your work publicly.
* Identify what training you need and when you will complete it.
* Meet with your faculty advisor to determine the frequency of meeting times throughout the semester and what you will accomplish at each meeting.

September and October Individual Goals on Next Page:

September and October Individual Goals:

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| Throughout September and October, the computational software will be developed. Weekly meetings with the graduate students in the TAMU HVI lab will occur starting the week of October 4, in which I will update them on my progress, and they will give any feedback they have. I will also be in close contact with an employee from Physics Applications International, who is an industry expert on the physics of sabot separation. I will schedule a meeting with him to update him on my progress in the week after midterms, October 19. I will attend the program orientation on October 12 and meet with my assigned reviewer that next week (14-21). Much of the housekeeping related to this project has already been completed. I am already enrolled in MEEN 491H for 4 credit hours this semester, focusing on writing the program. I am also employed as a research technician with the TAMU Department of Mechanical Engineering, so I have the required training to operate the experimental equipment needed for this paper. I have all the required permissions and have resources already available to me. I will most likely meet with my project advisor once a month to discuss my progress, starting late October (Week of the 19th). |

#### Section 5: Timeline – Fall 2020 Semester – November

November Instructions:

November Goals

Program Requirements

* Make sure you have attended at least one resource session by the November 25 deadline
* Attend the end-of-semester meeting with assigned thesis reviewer
* Submit your fall progress report by the November 30 deadline
* If you plan to enroll in the UGST 405 Thesis Writing Class, have you registered?
* If you are in the LAUNCH University Honors Program and using URS to fulfill your capstone requirement, have you registered for the RESEARCH CAPSTONE section of UGST 497?

Individual Goals

Continue to design your goals as if it were a class syllabus. Think about what you need to accomplish each WEEK and provide as much detail as possible. List assignments and other milestones for yourself, keeping your faculty advisor’s schedule in mind. State days and times you will be meeting with your faculty advisor.

Things to keep in mind:

* Has the direction of your project changed in any way that might require research compliance approval and/or training? Are you having regular conversations with your faculty advisor to ensure you are conducting legal and ethical research?
* Plan on a week-by-week basis how you are defining future directions for your research (you may be conducting an extensive literature review, conducting experiments, building prototypes, analyzing data, etc.) How is what you are reading, analyzing, or comparing helping you refine your research question?
* Solidify your thesis statement and/or research problem/question.
* Update your methodology based on your literature review, analyses, or comparisons, and discussions with your faculty advisor.
* What potential issues will you have in your research process? How will you address these challenges?
* Update your outline for your thesis. Do you need to make any changes to it based on your reading, procedures, experiments, analyses, etc.? Do you need to adjust your project timeline in any way to address the changes?
* State days and times you will be meeting with your faculty advisor. Address if you will be discussing research progress, written thesis content, or both.
* Identify a venue for your public presentation. If you need to register or secure funding ahead of time, have you done that? If not, when will you?
* What will you focus on this week? What do you still need to read, analyze, compare, build, or collect? What do you need to be thinking about over Winter Break?
* If you have already started writing, have you identified and reviewed the citation style you will be using? Have you discussed with your thesis reviewer any formatting questions you have? Have you reviewed the thesis manual and spring program requirements? If not, when do you plan to do these things?
* What will you begin writing first? Explain the organization of your thesis and when you plan to write your chapters/sections.

November Individual Goals on Next Page:

November Individual Goals on Next Page:

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| As of now, I am planning to attend the POWER Writing Productivity resource session on November 6th. I will also attend the end of semester meeting with my assigned thesis reviewer on the week of the 18th. At this point, according to the MEEN 491H syllabus that I curated at the beginning of the semester, the development of the program will be nearing completion, and the models will be starting to be reconciled with experimental data. The MEEN 491H goals naturally complete the experimental data gathering of this paper, so the paper itself will just be summarizing and analyzing results. I will begin to seriously outline the paper at this point, consulting the graduate students in my lab with ample writing experience, along with the research engineer post-doc employed in the lab. I will continue to keep in contact with my research advisor and my assigned reviewer. The last week or two of November will be spent preparing my Fall Progress Report to be turned in November 30th.  I will also enroll in UGST 405 on November 5th when Honors Registration begins. |

#### Section 5: Timeline – Fall 2020 Semester – Winter Break

Winter Break Instructions:

Winter Break Goals

Program Requirements

* Sign up to attend one thesis formatting workshop   
  (Available Dates: January 11, 14, 20, and 21)
* If you plan to present at the URS Symposium, register by January 27

Individual Goals

Continue to design your goals as if it were a class syllabus. Think about what you need to accomplish each WEEK and provide as much detail as possible. List assignments and other milestones for yourself.

Things to keep in mind:

* What do you need to gather to be able to continue reading, analyzing, or comparing your research over Winter Break?
* What are your writing goals for Winter Break?
* What are the presentation and publication venues you are considering? Do you need to identify additional venues or funding? When will you discuss these presentation and publication options with your faculty advisor when classes resume?
* Has the direction of your project changed in any way that might require research compliance approval and/or training? When classes resume, when will you discuss these changes with your faculty advisor to ensure you are conducting legal and ethical research?

Winter Break Individual Goals:

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| I will be staying in College Station for much of the winter break, so most of the paper will be written during this time interval. With no classes, I will have much more time to work in the lab, gathering more experimental data to help develop and verify models. I will most likely try to present an early version of this paper at the Hypervelocity Impact Symposium in January. I might also present at the URS Symposium, if time allows. |

### Section 5: Timeline – Spring 2021 Semester

#### Section 5: Timeline – Spring 2021 Semester – January and February

January and February Instructions:

January and February Goals

Program Requirements

* If you are in the LAUNCH University Honors Program and using URS to fulfill your capstone requirement, have you registered for the RESEARCH CAPSTONE section of UGST 497?
* Sign up to attend one thesis formatting workshop (Available Dates: January 11, 14, 20, and 21)
* If you plan to present at the URS Symposium, register by January 27
* Submit spring progress report 1
* Submit installment 1 and make revisions as requested by your assigned thesis reviewer

Individual Goals

Continue to design your goals as if it were a class syllabus. Think about what you need to accomplish each WEEK and provide as much detail as possible. List assignments and other milestones for yourself.

Things to keep in mind:

* Mark your calendars to attend URS program drop-in sessions and workshops.
  + Plan to attend thesis help drop-in session on January 22 to get help on installment 1
  + Plan to attend the Writing Abstracts workshop on January 22 to get help on your abstract submission before the URS Symposium registration deadline on January 27
  + Plan to attend the Presentation Skills workshop on February 16 to get help on your presentation before the URS Symposium on February 24
  + Plan to attend the Presentation Practice Session on February 23 to get help on your presentation before the URS Symposium on February 24
  + Plan to attend thesis help drop-in session on February 26 to get help on installment 2
* Plan for the Public Presentation requirement by registering for the URS Symposium (held on February 24). Registration will close on January 27.
* Has the direction of your project changed in any way that might require research compliance approval and/or training? Are you having regular conversations with your faculty advisor to ensure you are conducting legal and ethical research?
* How has your writing progressed?
  + How are you setting up your argument in relation to the existing dialogue or publications in your field?
  + Have you decided which of your sources are pertinent? Do you need to gather and review additional source material? How are you managing your data, sources, citations? Are you using citation software?
  + What kind of outline have you prepared to begin writing your thesis? Is it a simple sketch or detailed list? Do you have topic sentences for your main paragraphs? Have you planned or outlined the headings and subheadings for your chapters/sections?
  + How have you planned to maintain the thread of your main argument throughout your full thesis document? Are you telling your research story in a way that your reader can easily follow?
  + What have you started writing? Have you refined your thesis statement? Have you started thinking about transitions between your main paragraphs?
  + State days and times you will be meeting with your faculty advisor. Address if you will be discussing research progress, written thesis content, or both.
  + Have you visited the University Writing Center to take advantage of the [Dissertation, Article, and Thesis Assistance (DATA) program](https://writingcenter.tamu.edu/Students/Graduate-Students/DATA-(Dissertation-Article-and-Thesis-Assistance)) that is exclusive to URS students?

January and February Individual Goals on Next Page:

January and February Individual Goals:

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| At this point I will be finishing up the writing of the paper and contacting my research advisor to make any needed changes before the semester starts on January 19th. I plan to attend the January 14th Virtual Thesis Formatting Workshop. I will then begin preparing the First Installment and Spring Progress Report to be turned in on January 25th. At this point, I will decide if I am going to register for the URS Symposium. |

#### Section 5: Timeline – Spring 2021 Semester – March

March Instructions:

March Goals

Program Requirements

* Submit spring progress report 2 by March 1
* Submit installment 2 by March 1 and make revisions as requested by your assigned thesis reviewer
* Make a public presentation, if you have not already, no later than April 12\*
* Draft and submit the public presentation report no later than April 12\*

*\* Public presentations can take place in either fall or spring between October 12 and April 12 to meet the April 12 deadline to submit the Public Presentation Report.* ***Note:*** *Students on the Galveston campus are expected to present at the TAMUG Student Research Symposium in late-April and have until April 23 to submit Public Presentation Reports.*

Individual Goals

Continue to design your goals as if it were a class syllabus. Think about what you need to accomplish each WEEK and provide as much detail as possible. List assignments and other milestones for yourself.

Things to keep in mind:

* Mark your calendars to attend URS program drop-in sessions on April 8 and April 9 to get help on your final thesis.
* **You no longer have time to receive research compliance approval.** Are there any challenges or concerns that you need to discuss with your faculty advisor or LAUNCH staff? Are you having regular conversations with your faculty advisor to ensure you are conducting legal and ethical research?
* State days and times you will be sending your final thesis to your faculty advisor before turning it into LAUNCH on April 12. **Remember:** Revisions usually take longer than you think. You may need multiple rounds of revisions before your faculty advisor is satisfied—PLAN AHEAD.
* How are you wrapping up the writing process?
  + What remaining sections do you need to draft and revise?
  + Have you finalized the Introduction and Conclusion sections and made sure they connect to the arguments, analyses, and/or comparisons you presented in your chapter(s)/section(s)?
  + Are your subheadings telling your research story? Do your subheadings reflect the content of your thesis? **Remember:** Readers use subheadings to navigate your argument. Can your reader easily follow your research story?
  + Have you addressed any holes in your argument with your faculty advisor? How will you incorporate additional information in your thesis?
  + What are the future directions for this research? How will you incorporate these future directions into your thesis?
* Things to keep in mind for revising and formatting:
  + Have you asked your faculty advisor the correct way to list and spell his/her/their name and credentials on the Title and Abstract pages, and in the STSS? **Remember:** Not everyone has the title of Dr. or Ph.D. Be sure to check.
  + **If you are on a URS team:** Have all team members coordinated the correct way to list and spell names on the title and abstract pages? Teams should have a single, shared document.
  + Are there any others you need to list on the Acknowledgements page?   
    **Remember:** You must recognize funding sources and other contributors (such as graduate students).
  + Have you finalized all figures, tables, images, equations, etc.? Have you included any necessary permission statement(s) in the Appendix section? Are your captions and/or titles detailed enough for clear understanding?
  + Have you checked your in-text citations for proper format? Have you checked that all in-text citations appear in your References section(s)? Have you checked that your References section(s) is properly formatted?
  + Have you checked that your page numbers are correct in the Table of Contents and that subheadings correspond to the correct sections in your document?
  + Have you checked for any typos or spacing errors and inconsistencies?
* Things to keep in mind while you polish your writing in the final version of your thesis:
  + Is your writing concise?
  + Do you vary your sentence structure?
  + Do you vary your word choice? Have you avoided repetition?
  + Do you have transitions between paragraphs? Do you have internal transitions within your paragraphs so that your ideas flow?
  + Do you have manageable paragraph sizes?
  + Do you have proper punctuation?
  + Does your Conclusion summarize your main ideas? Does your Conclusion connect back to your Introduction? Have you presented a cohesive argument?
  + Have you visited the University Writing Center to take advantage of the [Dissertation, Article, and Thesis Assistance (DATA) program](https://writingcenter.tamu.edu/Students/Graduate-Students/DATA-(Dissertation-Article-and-Thesis-Assistance)) that is exclusive to URS students?

March Individual Goals:

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| Any last-minute changes will be made during this time. Hopefully, nothing major will be changed at this point. Extra experimental data might be added to the results sections as it becomes available with more hypervelocity testing in the lab. I will submit my Installment 2 and Spring Progress Report 2 on March 1. |

#### Section 5: Timeline – Spring 2021 Semester – April and May

April and May Instructions

April and May Goals

Program Requirements

* If you have not already, submit your Public Presentation Report by April 12\*
* Review the final thesis submission instructions
* Submit your Final Thesis by April 12 and submit revisions as requested by your faculty advisor and LAUNCH staff
* Determine your embargo selection (thesis hold) with your faculty advisor and team members (if applicable).

*\* Public presentations can take place in either fall or spring between October 12 and April 12 to meet the April 12 deadline to submit the Public Presentation Report.* ***Note:*** *Students on the Galveston campus are expected to present at the TAMUG Student Research Symposium in late-April and have until April 23 to submit Public Presentation Reports.*

Individual Goals

Things to keep in mind:

* If your faculty advisor requires revisions, make them immediately.
* If the LAUNCH office requires revisions, make them by the deadline(s) specified by your assigned thesis reviewer.
* **Remember: No changes can be made to your thesis once you have completed the program.**
* Have you determined your embargo selection (thesis hold) with your faculty advisor and team members (if applicable)? The standard embargo (thesis hold) is two years. LAUNCH will contact your faculty advisor once the hold has expired to determine if an extension if needed. Please be aware that if no response is received from your faculty advisor, your thesis will be published to the OAKTrust Repository and will be available to the public. Make sure you have had this conversation with your faculty advisor and team members (if applicable).

April and May Individual Goals:

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| Submit the thesis and Public Presentation Report on April 12. |