

Indian Institute of Science Education and Research Pune



Guidelines for the BS MS Project and Thesis

Academic Year 2019-20

General guidelines for Fifth year projects- BS MS Program

1. Students of BS MS program are required to carry out project work for two semesters in the fifth year. There are no courses to be credited during this year and as such the students are expected to devote their whole fifth year for the research work related to project.
2. The fifth year project carries total 36 credits which are divided into 18 credits per semester. Thus project work is equivalent to the full course load of 5 or 6 courses in each semester.
3. The students are expected to come up with MS theses containing good quantity as well as quality of work. It should be noted that all the BS MS students of IISER Pune are already exposed to different areas of research through multiple summer/winter projects, lab/theory projects during first four years.
4. Fifth year research projects may lead to publications in internationally reputed journals. Thus the students are encouraged to consider the fifth year projects very seriously. The students are encouraged to have some original component in their project work.
5. Fifth year students must attend a compulsory course on scientific ethics and related topics before they start the project work. This will be a one day course which will be offered every year in the beginning of March at IISER Pune.
6. Courses, which are relevant and required for doing the project more effectively and in greater depth, can be audited as per the instructions of the supervisor.
7. The project will be evaluated at the middle of the year, for performance throughout the semester, a brief project report (2-3 pages) as well as presentation. The report should consist of the work already done and to be done in next few months.
8. Mid-year evaluation will be conducted by the supervisor any time during the last 2 weeks of November. In the case of students who will be doing project outside IISER Pune, the supervisor will conduct the mid-year presentation on Skype so that the student can present the work before the supervisor as well as TAC member who is at IISER Pune. Based on the report and presentation, TAC (Thesis Advisory Committee) member will independently give marks out of 100 (for a weightage of 15%). The supervisor will give marks out of 100 (for a weightage of 20%) based on continuous assessment throughout the semester, report and presentation. The evaluation report with marks should be submitted by 30 November.

9. After mid-year evaluation, for any student to continue the project, a minimum score of 17 marks out of 35 is mandatory. If a student scores less than 17 marks then he/she has to start the project afresh. It can be with the same supervisor or a new supervisor.
10. The MS thesis on the work done during the project is to be submitted at the end of March. The TAC member will give marks out of 100 (for a weightage of 15%) for the thesis. The supervisor will give marks out of 100 (for a weightage of 20%) based on continuous assessment throughout the semester and the thesis, The Viva committee at IISER Pune will evaluate the thesis defense and give marks out of 100 (for a weightage of 30%).
11. Based on the marks obtained in various components, the total marks out of 100 will be calculated as per weightage given below.

Time of evaluation	Components of assessment	Marks out of 100 given by	Weightage in total marks
Mid-year or end of semester IX	Continuous evaluation for semester IX	Supervisor	20 %
	Report and Presentation	TAC member	15 %
End of fifth year or end of semester X	Continuous evaluation for semester X	Supervisor	20 %
	MS Thesis	TAC member	15 %
	Defence and viva	Discipline wise Committee	30 %

The final Score or Value point for the project is derived from the total marks out of 100 by converting it to a 10 point scale (up to one decimal place). This score will be used for calculating the final CGPA with 36 credits for the project work.

12. Students getting less than 50% or a score less than 5.0 will fail in the project. They are given either an extension to continue the project to improve the score or allowed to start a new project for another year, provided the total duration of the program is within seven years.

Important Dates –April Batch

1. Pre-registration – April 06 (Last date for submission of project proposal)

2. Registration in SAM for Sem IX and start of project- May 15

3. Late Registration in SAM- June 15

- Students who qualify for starting the project (cleared all courses with minimum credits of 84 in sem V-VIII and CGPA above 5.0) will register for the first part of project in SAM on May15. After repeat exam, any student becoming eligible can do late registration in SAM-June 15.

4. Mid-year assessment & Continuation

- Uploading Mid-year report as .pdf in SAM by students: 1st -5th Oct.
- Presentation and uploading marks in SAM – to be completed by: 7th -20th Oct. Students can see their report and comments and marks: 30th Oct.
- Clarifications and corrections in marks, if any: 5th Nov.

5. Registration in SAM for sem X

- Students recommended for continuation register in SAM for sem X-Jan 02

6. Submission of the MS thesis

- MS thesis sent to supervisor and project committee and library by e-mail- March 20
- Library will send similarity reports to students, supervisor and project committee by e-mail- March 25
- Uploading the final revised thesis in SAM by student -March 30
- Evaluation report and marks in SAM(format pdf) -April 20
- Evaluation report open to students- April 25

7. Thesis defence and final assessment

- MS thesis presentation and defense- May 02-04
- Uploading marks for viva and presentation in SAM- May 05
- Students can see scores and CGPA in SAM -May 12
- Clarifications or corrections in marks, if any, submitted- May 20

Important Dates-January batch

- 1. Pre-registration –December 06 (Last date for submission of project proposal)**
- 2. Registration in SAM for Sem IX and start of project- January 02**
 - Students who qualify for starting the project (cleared all courses with minimum credits of 84 in sem V-VIII and CGPA above 5.0) will register for the first part of project in SAM on January 02.
- 3. Mid-year assessment & Continuation**
 - Uploading Mid-year report as .pdf in SAM by students - June 20-30
 - Presentation and uploading marks in SAM – to be completed by July 10
 - Students can see their report and comments and marks-July 15
 - Clarifications and corrections in marks, if any - July 20
- 4. Registration in SAM for semester X**
 - Students recommended for continuation register in SAM for semester X-Aug 02
- 5. Submission of the MS thesis**
 - MS thesis sent to supervisor and project committee and library by e-mail- October 20
 - Library will send similarity reports to students, supervisor and project committee by e-mail- October 25
 - Uploading the final revised thesis in SAM by student -October 30
 - Evaluation report and marks in SAM(format pdf) -November 20
 - Evaluation report open to students- November 25
- 6. Thesis defence and final assessment**
 - MS thesis presentation and defence- December 02-04
 - Uploading marks for viva and presentation in SAM- December 05
 - Students can see scores and CGPA in SAM -December 12
 - Clarifications or corrections in marks, if any, sent to Dean- Dec 17

Fifth year project committee members:

Chairperson- Dr Supriya Pisolkar

Submission of pre-registration details

Submit the pre-registration details to the following 5th year project committee members:

S.No	Subject	Faculty Name	Discipline email Id
1	Biology	Dr. Siddhesh Kamat (Chair)	iiserbio5@iiserpune.ac.in
2	Chemistry	Dr. Muhammed Musthafa (Chair)	chem_proj@iiserpune.ac.in
3	Mathematics	Dr. Diganta Borah (Chair)	maths_proj@iiserpune.ac.in
4	Physics	Dr. Atikur Rahman (Chair)	phys_proj@iiserpune.ac.in
5	Earth Science	Dr. Dehiya Rahul (Chair)	ecs_5thyearproject@iiserpune.ac.in
6	Inter-disciplinary	Dr. Supriya Pisolkar (Chair)	supriya@iiserpune.ac.in
7	Humanities and Social Sciences	Dr. Pushkar Sohoni (Chair)	hss.projects@iiserpune.ac.in

Constitution of TAC

The thesis advisory committee (TAC) will assess the performance of the student continuously throughout the project period and also assist the students with useful inputs and suggestions. Depending upon the place where the project work is carried out the by student, the following formats are adapted for constituting the TAC.

Thesis advisor committee (TAC) form: The TAC constitutes of two members including supervisor and an expert. Please follow the below guidelines:

Case-1: If your project is done at IISER-Pune; then the expert may be chosen either from IISER-Pune or other institutes in India/abroad

Case-2: If your project is done in other institutes in India/abroad; then the expert must be chosen only from IISER-Pune.

If, any modification is required due to unavoidable reasons, it should be immediately communicated to the Chairperson, fifth year project committee (FYPC) (supriya@iiserpune.ac.in)

Constitution of Viva-Committee

The BS MS thesis viva committee will be constituted by the Head of the discipline and the names should be forwarded to the Chairman, fifth year project committee.

The Head of the discipline may also be a part of the committee or Chairperson. The viva committee so constituted will have the following composition:

1. **Chairperson:** Professor/Associate professor
2. Two faculty members of the same discipline (other than chairperson)
3. Fifth year project committee members of the same discipline

Component of the Evaluation

Mid-year marks:

Supervisor-out of 100 (weightage of 20%),

TAC member- out of 100 (weightage of 15%)

End-semester marks:

Supervisor- out of 100 (weightage of 20%),

TAC member- out of 100 (weightage of 15%),

Presentation and defence- out of 100 (weightage of 30%)

Instructions on Thesis writing

- (i) The typical number of pages in the thesis should be 60 to 80 pages.
- (ii) Late submission will not be accepted under any circumstances.
- (iii) Students should follow the style recommended by the discipline in which they are crediting the project work. The templates are attached in the Annexure
- (iv) The final version of thesis to be uploaded in SAM should be in .pdf with a size limited to 10MB.

Thesis Defense

1. The 5th year project committee member in consultation with the Head of the discipline will fix the date of the thesis defense.
2. The defense is open to all.
3. Each student will make a presentation for 20 minutes followed by questions/discussion for 10 minutes.

Mode of Presentation

1. Generally, the presentation should be done using MS power point. If any other mode of presentation has to be used, should be approved by the individual discipline.
2. Total number of slides should be restricted to a maximum of twenty (1 min/slide) which may be divided into Introduction and Objectives, Experimental (theory), Results and Discussion. The Final 1 or 2 slides may summarize the outcome of the thesis work. The following format may be useful:
 - Introduction: 3-4 slides
 - Experimental (theory): 3-4 slides
 - Results and Discussion: 8-10 slides
 - Summary: 1 slide
 - Acknowledgement: 1 slide

Annexure-1: BIOLOGY

Thesis structure for Biology @ IISER, Pune

Total thesis is typically between 50 – 80 pages, but the final page limit is at the discretion of the supervisor and student.

Line spacing should be 1.5.

Margins should be 1 inch.

Font should be Arial and 12 pts.

Title Page

Title (including subtitle), author, institution, department, research mentor(s) and advisor and their institutions.

Certificate

This is to certify that this dissertation entitled “.....” towards the partial fulfilment of the BS-MS dual degree programme at the Indian Institute of Science Education and Research, Pune represents study/work carried out by “Name of the Student at Name of the Institute (e.g. IISER Pune)” under the supervision of “Name of the Supervisor, Designation, Department” during the academic year

This certificate should be signed by both the student and the supervisor.

Declaration

I hereby declare that the matter embodied in the report entitled “.....” are the results of the work carried out by me at the Department of, Name of the Institute, under the supervision of Name of the faculty and the same has not been submitted elsewhere for any other degree.

This declaration should be signed by both the student and the supervisor.

Abstract

1. A good abstract explains in one line why the paper is important. It then goes on to give a summary of your major results. The final sentences explain the major implications of your work. A good abstract is concise, readable, and quantitative.
2. Length should be maximum 250 words.
3. Abstracts generally do not have citations.

List of Figures

List page numbers of all figures.

The list should include a short title for each figure but not the whole caption.

List of Tables

List page numbers of all tables.

The list should include a short title for each table but not the whole caption.

Acknowledgments

Introduction

The count is typically 2500 – 3000 words.

1. Sufficient background information to allow the reader to understand the context and significance of the question you are trying to address.
2. Sufficient references such that a reader could, by going to the library, achieve a sophisticated understanding of the context and significance of the question.
3. The introduction should be focused on the thesis question(s). All cited work should be directly relevant to the goals of the thesis. This is not a place to summarize everything you have ever read on a subject.
4. Explain the scope of your work, what will and will not be included.
5. A statement of the goal of the project: why the study was undertaken, or why the paper was written. Do not repeat the abstract. Break up the introduction section, if required, into logical segments by using subheads.

Materials and Methods

The total word count is typically 2500 – 3000 words

1. Information needed by another researcher to replicate your experiment.
2. Description of your materials, procedure, theory.
3. Calculations, technique, equipment, and calibration plots.

4. Limitations, assumptions, and range of validity.

5. Description of your analytical methods, including reference to any specialized statistical software.

*Do not include descriptions of results.

Results and Discussion

The total word count is typically 4000 – 5000 words

This section can be written separately as two sections or can be combined.

Results

The results are actual statements of observations, including statistics, tables and graphs. Indicate information on range of variation.

Mention negative results as well as positive. Do not interpret results – save that for the discussion.

Lay out the case as for a jury. Present sufficient details so that others can draw their own inferences and construct their own explanations.

Use S.I. units (m, s, kg, W, etc.) throughout the thesis.

Break up your results into logical segments by using subheadings.

Discussion

Start with a few sentences that summarize the most important results. The discussion section should be a brief essay in itself, answering the following questions and caveats:

1. What are the major patterns in the observations?
2. What are the relationships, trends and generalizations among the results?
3. What are the exceptions to these patterns or generalizations?
4. What are the likely causes (mechanisms) underlying these patterns resulting predictions?
5. Is there agreement or disagreement with previous work?
6. Interpret results in terms of background laid out in the introduction – what is the relationship of the present results to the original question?
7. What is the implication of the present results for other unanswered questions related to the project?
8. Multiple hypotheses: There are usually several possible explanations for results. Be careful to consider all of these rather than simply pushing your favorite one. If you can eliminate all but one, that is great, but often that is not possible with the data in hand. In that case you should give even treatment to the remaining possibilities, and try to indicate ways in which future work may lead to their discrimination.
9. What are the things we now know or understand that we didn't know or understand before the present work?
10. Include the evidence or line of reasoning supporting each interpretation.

11. What is the significance of the present results?

References

Should not exceed more than 60 references.

Follow the format in the peer-reviewed journal, **Cell**.

Within the body of text, it should be:

(Gupta et al., 2007; Marnett, 1992)

(Mills and Moolenaar, 2003; Ren et al., 2006)

The end reference section should be in alphabetical order.

For example:

Airan, R.D., Thompson, K.R., Fenno, L.E., Bernstein, H., and Deisseroth, K. (2009). Temporally precise in vivo control of intracellular signalling. *Nature* 458, 1025–1029.

Alm, E., Huang, K., and Arkin, A. (2006). The evolution of two-component systems in bacteria reveals different strategies for niche adaptation. *PLoS Comput. Biol.* 2, e143.

Aloy, P., Böttcher, B., Ceulemans, H., Leutwein, C., Mellwig, C., Fischer, S., Gavin, A.C., Bork, P., Superti-Furga, G., Serrano, L., and Russell, R.B. (2004). Structure-based assembly of protein complexes in yeast. *Science* 303, 2026–2029.

Annexure-2: CHEMISTRY

Thesis structure for Chemistry @ IISER Pune

Total thesis should not exceed 50 pages or 12,000 words.

The thesis should be written on back to back pages.

Line spacing should be 1.5.

Margins should be 1 inch.

Font should be Arial and 12 pts.

Title Page (A standard title page has been provided at the end)

Title, Author, Institution, Department, Research advisor (s) and their Institutions.

Certificate

This is to certify that this dissertation entitled “.....” towards the partial fulfilment of the BS-MS dual degree programme at the Indian Institute of Science Education and Research, Pune represents study/work carried out by “Name of the Student at Name of the Institute (e.g. IISER Pune)” under the supervision of “Name of the Supervisor, Designation, Department” during the academic year

This certificate should be signed by both the student and the supervisor.

Declaration

I hereby declare that the matter embodied in the report entitled “.....” are the results of the work carried out by me at the Department of, Name of the Institute, under the supervision of Name of the faculty and the same has not been submitted elsewhere for any other degree.

This declaration should be signed by both the student and the supervisor.

Acknowledgements

Contents

List of Figures

List page numbers of all figures.

The list should include a short title for each figure but not the whole caption.

List of Tables

List page numbers of all tables.

The list should include a short title for each table but not the whole caption.

Abstract

A good abstract explains in one line why the paper is important. It then goes on to give a summary of your major results. The final sentences explain the major implications of your work. A good abstract is concise, readable, and quantitative.

Length should be maximum 250 words.

Abstracts generally do not have citations.

1. INTRODUCTION

Maximum word count is 2500 words.

1. Sufficient background information to allow the reader to understand the context and significance of the question you are trying to address.
2. Sufficient references such that a reader could, by going to the library, achieve a sophisticated understanding of the context and significance of the question.
3. The introduction should be focused on the thesis question(s). All cited work should be directly relevant to the goals of the thesis. This is not a place to summarize everything you have ever read on a subject.
4. Explain the scope of your work, what will and will not be included.
5. A statement of the goal of the project: why the study was undertaken, or why the paper was written. Do not repeat the abstract. Break up the introduction section, if required, into logical segments by using subheads.

2. METHODS

2.1. Experimental Section.

2.2. Theoretical/Computational Section

Total word count: 2500 words

1. Information needed by another researcher to replicate your experiment.
2. Description of your materials, procedure, theory.
3. Calculations, technique, equipment, and calibration plots.
4. Limitations, assumptions, and range of validity.
5. Description of your analytical methods, including reference to any specialized statistical software.

Do not include descriptions of results.

3. RESULTS AND DISCUSSION

Total word count: 4000 words

This section can be written separately as two sections or can be combined.

Results

The results are actual statements of observations, including statistics, tables and graphs. Break up your results into logical segments by using subheadings. Put the relevant figures and tables along with the text. **Don't put figures and tables separately.**

If you are writing results and discussion separately, do not interpret results – save that for the discussion.

Use S.I. units throughout the thesis.

Discussion

Start with a few sentences that summarize the most important results. The discussion section should be a brief essay in itself, answering the following questions and caveats:

1. What are the major patterns in the observations?
2. What are the relationships, trends and generalizations among the results?
3. What are the exceptions to these patterns or generalizations?
4. What are the likely causes (mechanisms) underlying these patterns resulting predictions?
5. Is there agreement or disagreement with previous work?
6. Interpret results in terms of background laid out in the introduction – what is the relationship of the present results to the original question?
7. What is the implication of the present results for other unanswered questions related to the project?
8. Multiple hypotheses: There are usually several possible explanations for results. Be careful to consider all of these rather than simply pushing your favorite one. If you can eliminate all but one, that is great, but often that is not possible with the data in hand. In that case you should give even treatment to the remaining possibilities, and try to indicate ways in which future work may lead to their discrimination.
9. What are the things we now know or understand that we didn't know or understand before the present work?
10. Include the evidence or line of reasoning supporting each interpretation.
11. What is the significance of the present results?

4. CONCLUSIONS

REFERENCES

Should not exceed more than 60 references.

- (1) Jiang, B. H.; Liu, W. B.; Song, S. M. A novel peptide isolated from a phage display peptide library with trastuzumab can mimic antigen epitope of HER-2. *J. Biol. Chem.* **2005**, *280*, 4656-4662.

Annexure-3: Physics

Thesis structure for Physics @ IISER Pune

Length, Spacing and Fonts

The thesis should not exceed 70 pages (approximately 16,000 words)

The typesetting should be double sided, with line spacing of 1.5

Page margins should be 1 inch.

Font should be 12 pts, Times New Roman, [in Latex use `\usepackage{mathptmx}`]

Title Page

Title, Author, Institution, Department, Research advisor (s) and their Institutions.

Certificate (one page)

This is to certify that this dissertation entitled “.....” towards the partial fulfilment of the BS-MS dual degree programme at the Indian Institute of Science Education and Research, Pune represents study/work carried out by “Name of the Student at Name of the Institute (e.g. IISER Pune)” under the supervision of “Name of the Supervisor, Designation, Department” during the academic year

This certificate should be signed by both the student and the supervisor.

Declaration (one page)

I hereby declare that the matter embodied in the report entitled “.....” are the results of the work carried out by me at the Department of, Name of the Institute, under the supervision of Name of the faculty and the same has not been submitted elsewhere for any other degree.

This declaration should be signed by both the student and the supervisor.

Acknowledgements

Contents

List of Figures

List page numbers of all figures.

The list should include a short title for each figure but not the whole caption.

List of Tables

List page numbers of all tables.

The list should include a short title for each table but not the whole caption.

Abstract

The abstract should clearly explain the motivation, brief methodology, the key results and a brief outlook of the thesis work carried out by the candidate.

Length should be maximum 350 words.

Abstracts generally do not have citations. If a citation is absolutely necessary then use the complete citation in the abstract itself.

1. INTRODUCTION

Maximum word count is 4000 words.

1. Sufficient background information to allow the reader to understand the context and significance of the thesis work.
2. Sufficient references such that a reader could achieve further understanding of the context and significance of the work being carried out.
3. The introduction should be focused on the thesis work. All cited work should be directly relevant to the goals of the thesis. This is not a place to summarize everything you have ever read on a subject.
4. Explain the scope of your work, what will and will not be included.
5. A statement of the goal of the project: why the study was undertaken, or why the paper was written. Do not repeat the abstract. Break up the introduction section, if required, into logical segments by using subsections.

2. METHODS

2.1. Experimental/Theoretical/Computational Section

Total word count: 5000 words

1. Information needed by another researcher to replicate your experiment.
2. Description of your materials, procedure, theory.
3. Calculations, technique, equipment, and calibration plots.
4. Limitations, assumptions, and range of validity.
5. Description of your analytical methods, including reference to any specialized statistical software.
6. Do not include descriptions of results.

Results and Discussion

Total word count: 6000 words

This section can be written separately as two sections or can be combined.

Results

1. The results are actual statements of observations, including statistics, tables and graphs.
2. Mention negative results as well as positive.
3. Lay out the case as for a jury. Present sufficient details so that others can draw their own inferences and construct their own explanations.
4. Use S.I. units throughout the thesis.
5. Break up your results into logical segments by using subheadings.

Discussion

Start with a few sentences that summarize the most important results. The discussion section should be a brief essay in itself, answering the following questions and caveats:

1. What are the major patterns in the observations?
2. What are the relationships, trends and generalizations among the results?
3. What are the exceptions to these patterns or generalizations?

4. What are the likely causes (mechanisms) underlying these patterns resulting predictions?
5. Is there agreement or disagreement with previous work?
6. Interpret results in terms of background laid out in the introduction – what is the relationship of the present results to the original question?
7. What is the implication of the present results for other unanswered questions related to the project?
8. Multiple hypotheses: There are usually several possible explanations for results. Be careful to consider all of these rather than simply pushing your favorite one. If you can eliminate all but one, that is great, but often that is not possible with the data in hand. In that case you should give even treatment to the remaining possibilities, and try to indicate ways in which future work may lead to their discrimination.
9. What are the things we now know or understand that we didn't know or understand before the present work?
10. Include the evidence or line of reasoning supporting each interpretation.
11. What is the significance of the present results?

Conclusions and Outlook

Maximum of 1000 words

This is a very important section of your thesis, where you should –

1. Briefly mention the key results in the context of the motivation laid out in the Abstract and Introduction.
2. Implication of the presented results in the context of advancing the current research topic.

Bibliography

All references should appear at the end of the thesis, and should be in the following style,

[1] T. Kinoshita, T. Wenger, and D. S. Weiss, *A Quantum Newton's Cradle*, Nature **440**, 900 (2006).

[2] M. A. Cazalilla, R. Citro, T. Giamarchi, E. Orignac, and M. Rigol, *One Dimensional Bosons: From Condensed Matter Systems to Ultracold Gases*, Rev. Mod. Phys. **83**, 1405 (2011).

[3] H. Spohn, *Large Scale Dynamics of Interacting Particles* (Springer, Berlin, 1991).

Within the text, the references should appear as [N], where N is the reference number.

Annexure-4: EARTH AND CLIMATE SCIENCE

Thesis structure for *EARTH AND CLIMATE SCIENCE* @ IISER Pune

Total thesis should not exceed 50 pages or 12,000 words.

The thesis should be written on back to back pages.

Line spacing should be 1.5.

Margins should be 1 inch.

Font should be Arial and 12 pts.

Title Page

Title, Author, Institution, Department, Research advisor (s) and their Institutions.

Certificate

This is to certify that this dissertation entitled “.....” towards the partial fulfilment of the BS-MS dual degree programme at the Indian Institute of Science Education and Research, Pune represents study/work carried out by “Name of the Student” at “Name of the Institute (e.g. IISER Pune)” under the supervision of “Name of the Supervisor, Designation, Department” during the academic year

This certificate should be signed by both the student and the supervisor.

Declaration

I hereby declare that the research work presented in the report entitled “.....” have been carried out by me at the Department of, Name of the Institute, under the supervision of Name of the faculty and the same has not been submitted elsewhere for any other degree.

This declaration should be signed by both the student and the supervisor.

Acknowledgements

Contents

List of Figures

List page numbers of all figures.

The list should include a short title for each figure but not the whole caption.

List of Tables

List page numbers of all tables.

The list should include a short title for each table but not the whole caption.

Abstract

Length should be maximum 300 words.

Abstracts should not have citations.

The abstract should start with a short introductory statement highlighting importance of the work. It then goes on to give a summary of your major results. The final sentences explain the major implications of your work.

1. Introduction

Maximum word count is 2500 words.

1. Sufficient background information to allow the reader to understand the context and significance of the question you are trying to address.
2. Sufficient references such that a reader could, by going to the library, achieve a sophisticated understanding of the context and significance of the question.
3. The introduction should be focused on the thesis question(s). All cited work should be directly relevant to the goals of the thesis. This is not a place to summarize everything you have ever read on a subject.
4. Explain the scope of your work, what will and will not be included.
5. A statement of the goal of the project: why the study was undertaken, or why the paper was written. Do not repeat the abstract. Break up the introduction section, if required, into logical segments by using subheads.

2. Material and Methods

2.1. Experimental Section.

2.2. Theoretical/Computational Section

Total word count: 2500 words

1. Information needed by another researcher to replicate your experiment.
2. Description of your materials, procedure, theory.
3. Calculations, technique, equipment, and calibration plots.
4. Limitations, assumptions, and range of validity.
5. Description of your analytical methods, including reference to any specialized statistical software.

Do not include descriptions of results.

3. RESULTS AND DISCUSSION

Total word count: 4000 words

This section can be written separately as two sections or can be combined.

Results

The results are actual statements of observations, including statistics, tables and graphs. Break up your results into logical segments by using subheadings. Put the relevant figures and tables along with the text. **Don't put figures and tables separately.**

If you are writing results and discussion separately, do not interpret results – save that for the discussion.

Use S.I. units throughout the thesis.

Discussion

Start with a few sentences that summarize the most important results. The discussion section should be a brief essay in itself, answering the following questions and caveats:

1. What are the major patterns in the observations?
2. What are the relationships, trends and generalizations among the results?
3. What are the exceptions to these patterns or generalizations?
4. What are the likely causes (mechanisms) underlying these patterns resulting predictions?

5. Is there agreement or disagreement with previous work?
6. Interpret results in terms of background laid out in the introduction - what is the relationship of the present results to the original question?
7. What is the implication of the present results for other unanswered questions related to the project?
8. Multiple hypotheses: There are usually several possible explanations for results. Be careful to consider all of these rather than simply pushing your favorite one. If you can eliminate all but one, that is great, but often that is not possible with the data in hand. In that case you should give even treatment to the remaining possibilities, and try to indicate ways in which future work may lead to their discrimination.
9. What are the things we now know or understand that we didn't know or understand before the present work?
10. Include the evidence or line of reasoning supporting each interpretation.
11. What is the significance of the present results?

4. CONCLUSIONS

REFERENCES

Should not exceed more than 50 references.

- (1) Campbell, I.H., Taylor, S.R. (1983) No water, no granites-No oceans, no continents. Geophysical research Letters, 10, 1061-1064.

Annexure 5: MATHEMATICS

(Refer the example thesis available in IISER Pune intranet)

1. The thesis template in Latex.
2. iiser-thesis.cls for the front matter.
3. image file iiser-logo.jpg