INPE Digital Publication Guide

PORTUGUESE VERSION

http://urlib.net/ibi/8JMKD3MGPDW34M/44FHSQ2

INTRODUCTION

In this guide, you are about to find the instructions to prepare and to submit your thesis or dissertation (T&D) accordingly to the style adopted by INPE.

There are as well links to other manuals and FAQs which may help you in the use of the templates.

INTRODUCTION

Here you'll find:

- The T&D reviewing steps since your proposal up to the publishing;

- How to perform a literature review;

- ABNT format styles;

- The two possible structures options to present your T&D (long format or article-based).

Use the following menu to consult this guide and the bottons to navigate between pages

Main Menu

Module 1
Why publish?

Module 2
T&D reviewing process

Module 3
Overall informations

Module 4
Structuring your thesis

Module 5
Norms and styles

Module 6
How to publish?

Documentation

MODULE 1: WHY PUBLISH?

To record, preserve, and share the new knowledge.

To wide its visibility and reachability. INPE follows to Open Archives Initiative Protocol for Metadata Harvesting which makes the work available at the [Biblioteca Digital de Teses e Dissertações (BDTD)](#) where all the thesis and dissertations produced in Brazil are registered.

MODULE 1: WHY PUBLISH?

Your T&D must be registered and made available at the INPE Digital Library (RE/DIR-204 de 2007).

MODULE 2: T&D REVIEWING PROCESS MENU

Phase 0: After the defense of the Thesis proposal

Phase1: After the Thesis defense

- [How to submit to INPE digital library?](#)

Phase 2: Proofreading: Thesis structure and format review

Phase 3: Final documentation

Phase 4: Publishing

Phase 5: Final steps

HOME MENU

MODULE 2 – T&D REVIEWING PROCESS
Phase 0: After the defense of the Thesis proposal

The library will send you an e-mail with "how to" instructions to:

- How to standardize T&D using INPE style;

- Write the references in ABNT style;

- *Donwload the Word and LaTeX template*;

- Write your thesis in the article-based format.

MODULE 2 – T&D REVIEWING PROCESS

Phase 1: After the Thesis defense

You'll receive an e-mail with instructions to submit your thesis to the Library following these steps:

- Fill the submition form;
- Upload the Thesis file;
- Transfer the uptdate permission to the Library.

The Library:

- Will perform the **1ª review** and send back to you for any necessary correction.
- Your dedline to resubmit the Thesis with all the request corrections is up to **10 days** before the 60 definied by the SEPGR.

How to submit?

- Access: www.inpe.br/biblioteca

- In the Menu, select: Editoração→ Submissão de Publicações →
Formulário

How to submit?

Fill the form;

Mandatory fields have an asterisk (*)

Important:

Keep in mind your password in order to use it on further steps;

The submission form must be filled **only once** and you'll need to search for this very form to resubmit your thesis.

How to submit?

Permission transference: select the option **BIBLIOTECA**

Upload your file.

Type your INPE e-mail: xxxx.yyyyy@inpe.br

Create a password.

Accept the terms.

Click on **Salvar Sair** to end the process.

Transferir Permissão de Atualização para:	(?)	BIBLIOTECA - Inicia Revisão ✔
Nome da Pasta	(?)	
Nome do Arquivo (anexe aqui o seu arquivo)	(?)	Escolher arquivo Publicação de...hos_2021.pdf
e-Mail (login)	(*)(?)	gabriel.barbedo@inpe.br
Senha Não tem ou a esqueceu?	(*)	●●●●●●●●●●●

Sobre Direitos Autorais

Por meio deste formulário, você está executando o processo de submissão/editoração de uma obra que será considerada como não infringindo direitos autorais.

Ao executá-lo, você permanecerá com todos os seus direitos de autor e estará dando condição ao INPE para eventualmente franquear a consulta à sua obra acompanhada da licença de uso de sua preferência, e autorizando o INPE a fazer nela todas as alterações de formato que foram necessárias para torná-la uma publicação INPE e mantê-la em condição de acessibilidade na Web.

Conforme a Lei nº 12.527, de 18 de novembro de 2011, o INPE será, em particular, responsável pelo armazenamento e preservação da obra, franqueamento de sua consulta desde que autorizado por você, manutenção de sua identificação e acesso, e integridade de qualquer cópia sob sua responsabilidade. No entanto, o INPE não se responsabiliza com a defesa da obra, por exemplo em caso de plágio.

Por motivo de segurança, recomenda-se que você guarde, em seu poder, uma cópia de sua obra.

Durante o período de edição/submissão (1), você poderá atualizar o documento submetido ou cancelar sua submissão simplesmente substituindo o documento submetido por um documento em branco.

(1) A tese ou dissertação poderá ser atualizada enquanto ela não estiver aprovada para publicação.

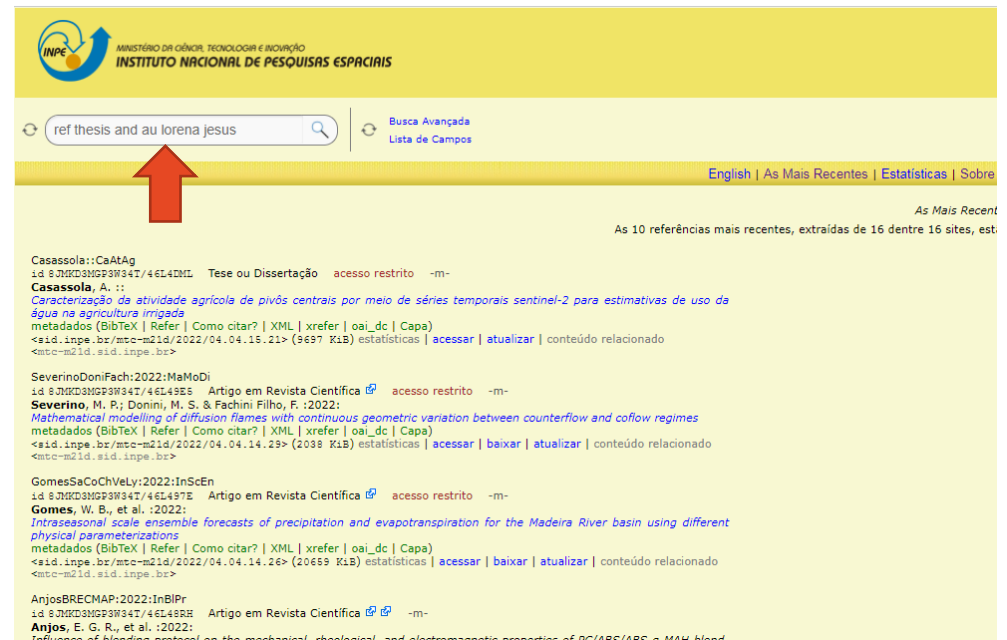☑ Aceito as condições acima sobre direitos autorais.

Salvar/Conferir   Salvar/Sair

Submeter um documento pode levar alguns segundos, por favor, aguarde a tela de confirmação de submissão.

How to submit?

• In order to resubmit your thesis, access: http://bibdigital.sid.inpe.br

• Type the expression: *au **your name** and ref thesis*

• Press enter.

• When you found your record, click on **atualizar**.

MODULE 2 – T&D REVIEWING PROCESS

Phase 2: Proofreading: Thesis structure and format review

10 days before the deadline stipulated by SEPGR:

> You must resubmit your revised thesis (with Library + examination board comments) to the INPE digital library

> The Library will send you a warming by e-mail if the 10 days pass and you haven't resubmit yet.

If there is any more editing required

> The Library will send the document back to you to resubmitted within **5 days** before the SEPGR deadline.

If the review is complete:

> We go to the **Phase 3**

MENU MODULE 2

MODULE 2 – T&D REVIEWING PROCESS

Phase 3: Final Documentation

Your Thesis is now ready to be published. If you have written it using:

> LaTeX: We'll consider the last PDF you sent us

> Word: We'll send the word document back to you in order to generate the PDF and sent it back to us.

Also, you'll need to send us:

> **Termo de Depósito** (publishing permission)

> Adviser's statement

MODULE2 – T&D REVIEWING PROCESS

Phase 4: Publishing

Library

- The Library will solicit the signature of the library reviwer, the adviser, and the head of the *Coordenação de Ensino, Pesquisa e Extensão* (COEPE);
- The Library will elaborate:
  - Thesis Cover,
  - Catalographic card,
  - Approval sheet, and
  - PDF bookmarks.

MODULE 2 – T&D REVIEWING PROCESS

Phase 5: Final Steps

When the Phase 4 is done:

- The Library will review the digital library metadata and double-check the final PDF.

- With all the above steps performed, we will confirm the publication of the thesis by e-mail with its access link.

MODULE 3 – OVERALL INFORMATIONS MENU

Main Questions

T&D Access

Format & style supplementary materials

Other documents you can publish

Research sources

ABNT style

MAIN MENU

MODULE 3 – OVERALL INFORMATIONS

MAIN QUESTIONS

See FAQ about T&D process review

If your question is not contemplate in the FAQ, please contact pubtc@inpe.br

T&D ACCESS:

All the research produced by INPE has open access.

Exception:
Restricted access

Confidential

- If your thesis generate a **patent**: Brazilian information-access law (Law 12.527/2011).

Restrict

- If your thesis has industrial copyrights or generates a comercial computer software.

MODULE 3 – OVERALL INFORMATIONS
FORMAT STYLES SUPPLEMENTARY MATERIALS

http://urlib.net/rep/8J
MKD3MGP8W/PGU542

http://urlib.net/ibi/8JMKD3M
GP3W34P/48DDA2S

http://urlib.net/ibi/8JMKD3M
GP3W34P/45AUQAP

MENU MODULE 3
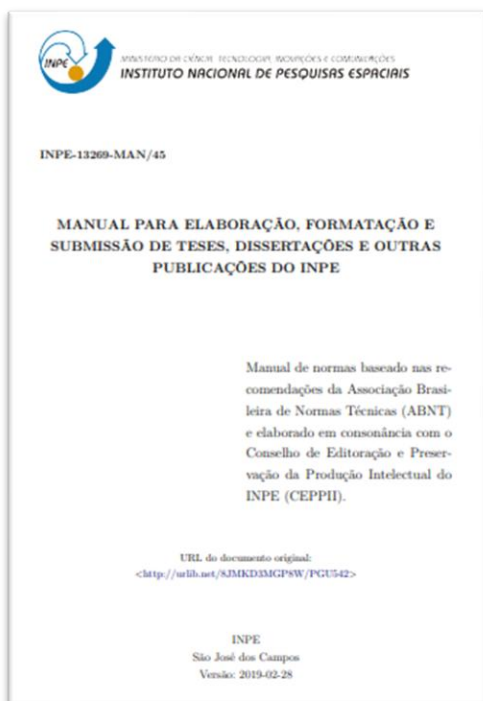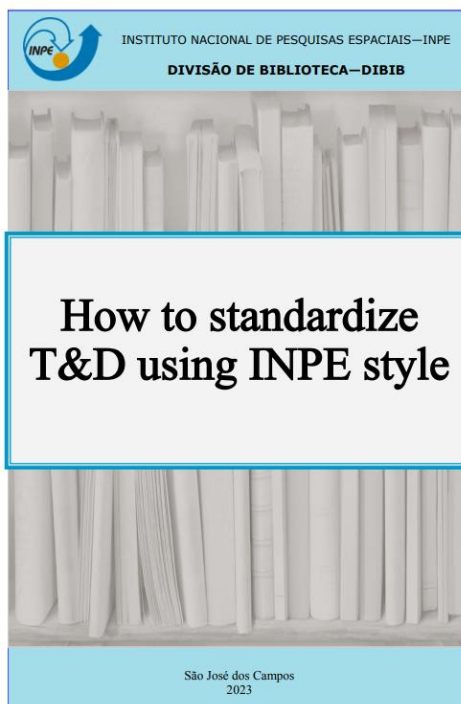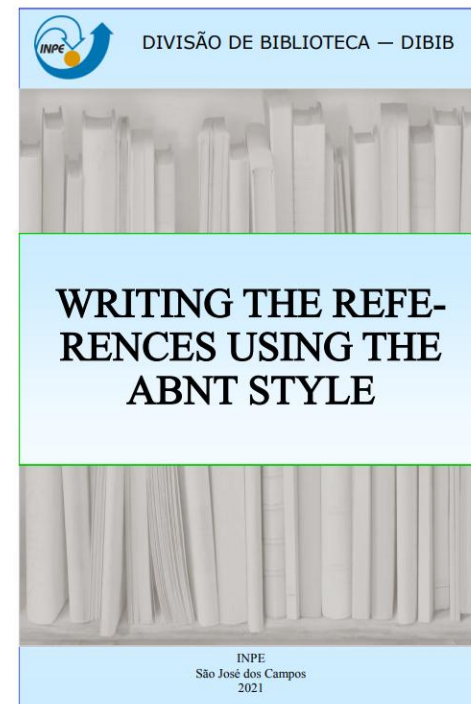
Other documents you can publish in the INPE digital library

- You can publish other documents in the INPE digital library:

Books

Reports

Technical notes

Didactic materials

E-prints

Research database

Obs: In order to use INPE's digital repositories, you are one of your co-authors must have any affiliation with the Institute (temporary or permanent)

More informations, access: http://urlib.net/ibi/8JMKD3MGP3W34P/45C27HP

A researcher must show a deep knowledge about his/her research theme. To do so, his/her needs to perform a comprehensive literature review.

Steps for a good literature review:

- Narrow your research question;
- select your keywords;
- search deep on peer-reviewed literature databases;
- select the pertinent literature;
- manage all the informations and citations collected.

MODULE 3 – OVERALL INFORMATIONS
RESEARH SOURCES

Links on images
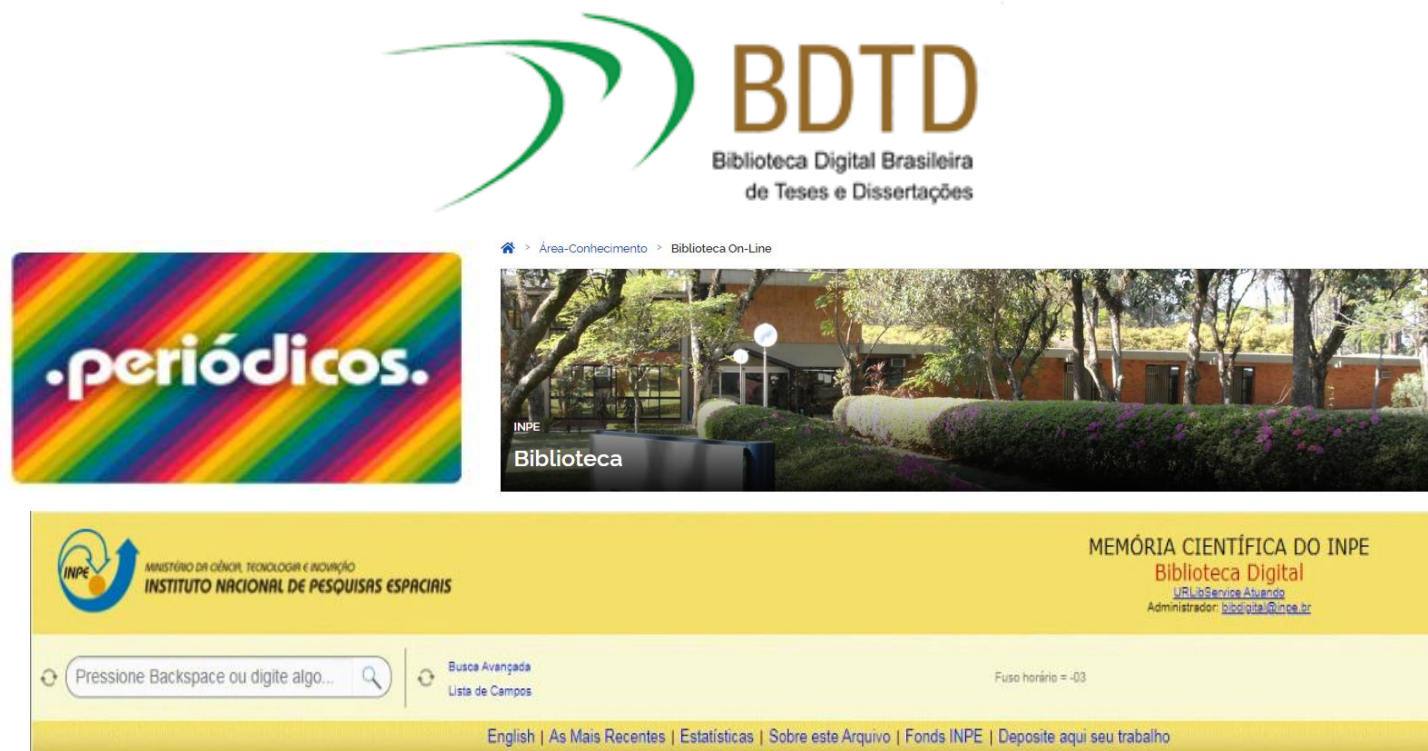
MODULE 3 – OVERALL INFORMATIONS
PORTAL CAPES

How to remotely access Portal CAPES (Rede CAFe)

Research on databases

Database use online training

Training calendar

MODULE 3 – OVERALL INFORMATIONS

ABNT STYLES

As a general rule, institutions worldwide adopt a T&D format style (e.g., APA, Chicago, MLA). With few exceptions, Brazilian research institution follow ABNT style (Brazilian Association of Technical Standards).

When a text has all of its elements standardized (e.g., tables, figures, captions, citations, references), it improves it reading.

MODULE 3 – OVERALL INFORMATIONS
ABNT STYLES FOR

6023 – References

6024 – Progressive numbering of document

6027 – Contents

6028 – Abstract

10520 – Citations

14724 – Academic document structure

MODULE 4 – STRUCTURING YOUR THESIS

Basic elements

Front matter

Text body

Alternative format (Article-based format)

Back matter

MAIN MENU

MODULE 4 – STRUCTURING YOUR THESIS

BASIC ELEMENTS

Front Matter
- Cover (mandatory)
- Back cover (mandatory)
- Tittle page (mandatory)
- Index card (mandatory)
- Approval term (mandatory)
- Dedicatory (optional)
- Aknowledgements (optional)
- Epigraph (optional)
- Abstract (mandatory)
- Resumo (abstract in Portuguese) (mandatory)
- List of Figures (mandatory with more than two figures)
- List of Tables (mandatory with more than two tables)
- List of Abbreviations (optional)
- List of Symbols (optional)
- Contents (mandatory)

Text body
- Indroduction
- Body text
- Conclusion

Back Matter
- References (mandatory)
- Glossary (optional)
- Appendix (optional)
- Annex (optional)
- Index (optional)

MODULE 4 – STRUCTURING YOUR THESIS

T&D PAGINATION
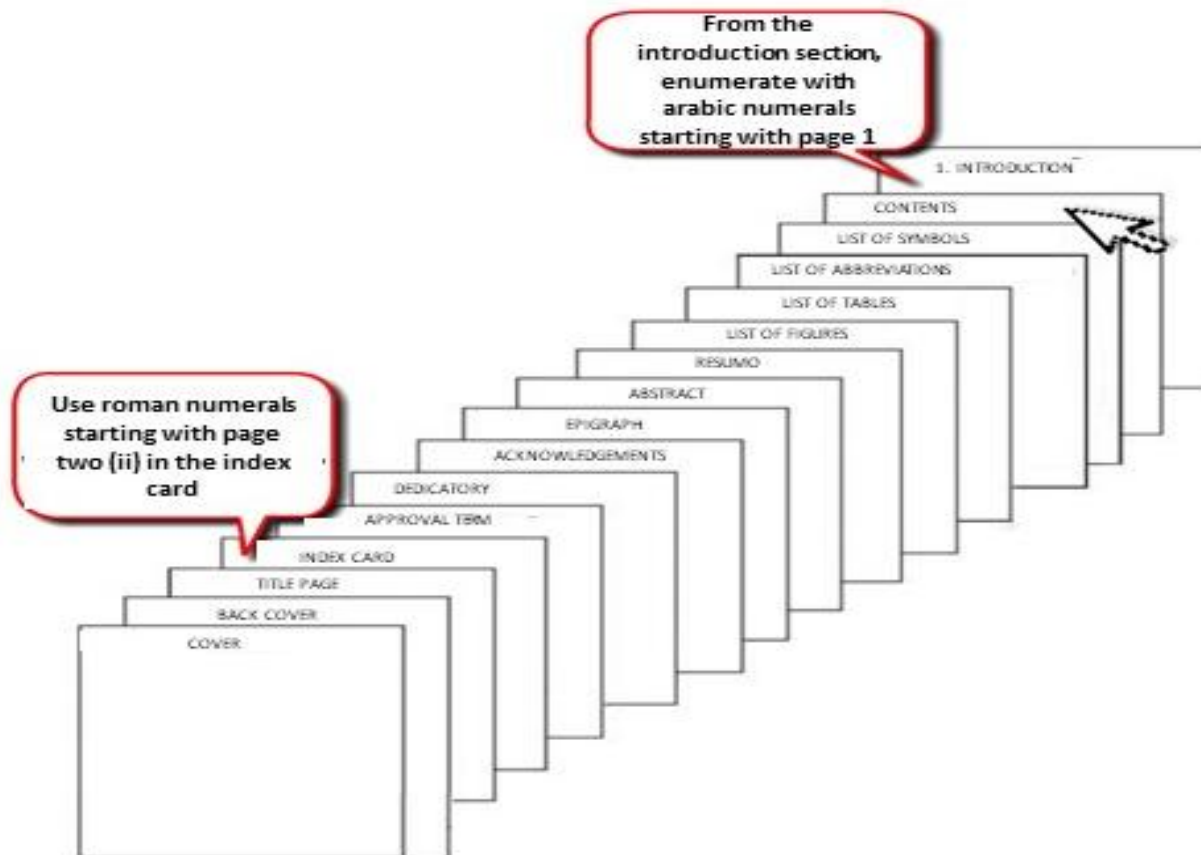
MODULE 4 – STRUCTURING YOUR THESIS FRONT MATTER

Cover

Back Cover

Title page

Index card

Approval term

Dedicatory

Acknowledgements

Epigraph

Abstract

Resumo (abstract in portuguese)

List of Figures

List of Tables

List of Abbreviations

Contents

MODULE 4 – STRUCTURING YOUR THESIS
FRONT MATTER

Thesis elements made by the INPE library for the final document:

- Cover ;
- Back cover;
- Title page;
- Index card;
- Approval page (provided by SEPGR).

FRONT MATTER

ACKNOWLEDGEMENTS

Optional: Personal acknowledgements

Mandatory For funding agencies

But remember It's always nice to thank people for their help and support

FRONT MATTER

ABSTRACT AND *RESUMO*

Structure your text in only one paragraph (single spacing).

If you're writing your thesis in English, put the Abstract before the *Resumo*. Do otherwise if writing in Portuguese.

FRONT MATTER

ABSTRACT AND *RESUMO*

ABSTRACT

The increasing accessibility to space provided by small satellites, especially the CubeSat standard, with lower costs and shorter development time, has stimulated many new missions and possibilities. As a measure to reduce CubeSat mission failure rates, which are comparatively high, there is a need to tailor Systems Engineering practices and methodologies to fit the time and cost budgets of these kinds of missions. Throughout the entire life-cycle of space missions, modelling and simulation play a large role in supporting the engineering and operation activities. Early stage design activities, such as feasibility and performance analyses, trade-off studies, and requirement specifications, are commonly performed based on concurrent engineering practices in design offices, such as Concurrent Engineering Centers, and benefit from modelling and simulation. In this dissertation, the author proposes and demonstrates a modelling process, called Conops2M, that guides the construction of an initial mission architecture focused on the concept of operations, preparing for the simulation of operation scenarios to be used in early phase design trade-studies, through automatic model transformation and code generation. Conops2M transforms mission operation objectives and requirements into functions realized by the mission's Space and Ground Segments, highlighting the interactions and dependencies among them. Conops2M is demonstrated through an instantiation for a generic CubeSat mission, and then applied for the NanosatC-Br2, a scientific CubeSat mission developed by Brazil's National Institute for Space Research (INPE) and the Federal University of Santa Maria (UFSM). An example trade study analysis is conducted comparing the simulation of different operation scenarios generated using Conops2M, and the results are discussed.

Keywords: Concept of Operations. Modelling & Simulation. Model Based Systems Engineering. CubeSat.

CONOPS2M: MODELAGEM DO CONCEITO DE OPERAÇÕES PARA MISSÕES ESPACIAIS BASEADAS EM CUBESATS

RESUMO

A crescente acessibilidade ao espaço providenciada por pequenos satélites, em especial do padrão CubeSat, com menores custos e períodos de desenvolvimento mais curtos, tem estimulado várias novas missões e possibilidades. Como uma medida para reduzir as taxas de falhas em missões CubeSat, que são comparativamente altas, há uma necessidade de adaptar as práticas e metodologias de Engenharia de Sistemas para as adequar às disponibilidades de recursos financeiros e cronogramas deste tipo de missão. Ao longo de todo o ciclo de vida de missões espaciais, modelagem e simulação têm um grande papel em apoiar as atividades de engenharia e operações. Atividades de projeto iniciais, como análises de viabilidade e performance, estudos de *trade-off*, e especificação de requisitos, são comumente feitos baseados em práticas de engenharia simultânea em escritórios de projetos, como Centros de Engenharia Simultânea, e se beneficiam de modelagem e simulação. Nesta dissertação, o autor propõe e demonstra um processo de modelagem, denominado Conops2M, que guia a construção de uma arquitetura inicial de missão focada no conceito de operações, preparando para a simulação de cenários operacionais ser utilizada em estudos de *trade-off* em estágios iniciais de projeto, através de transformação automática de modelo e geração automática de código. Conops2M transforma objetivos e requisitos operacionais de missão em funções realizadas pelos segmentos Espacial e Solo da missão, destacando as interações e as dependências entre eles. Conops2M é demonstrado através de uma instanciação para uma missão CubeSat genérica, e em seguida é aplicado para o NanosatC-Br2, uma missão CubeSat científica desenvolvida pelo Instituto Nacional de Pesquisas Espaciais (INPE) e pela Universidade Federal de Santa Maria (UFSM). Um exemplo de análise de um estudo de *trade-off* é conduzido comparando a simulação de diferentes cenários ope-racionais gerados usando Conops2M, e os resultados são discutidos.

Palavras-chave: CONOPS. Modelo. MBSE. CubeSat.

MODULE 4 – STRUCTURING YOUR THESIS

TEXT BODY

TEXT BODY

INTRODUCTION

It contextualizes your research problem from a broadened to a specific perspective where the research objectives and hypotheses are presented.

TEXT BODY

LITERATURE REVIEW

Critical analysis of the available knowledge about the research theme. It discusses theoretical and/or practical limitations and methodologies, pointing to new research perspectives.

TEXT BODY

MATERIALS AND METHODS

How, when, and where was made the research

Inclusive and exclusive criterials

State them clearly and objectivey to allows their reproducibility

Sampling procedures

TEXT BODY

RESULTS

Describe your findings concisely and objectively

Make use the tables and charts wisely to better expose your results

TEXT BODY

DISCUSSION

Answer your proposed questions orderly

Reestate your main findings and discuss them based on current and/or classical studies

Present future research directions

TEXT BODY

CONCLUSION

Extract the meaning from your results in face of the discussion you have made in order to refute or corroborate your hypotheses, or to conclude about your set goals.

Attention:

Remind to reader about your hypothesis and/or goals

TEXT BODY

1. Introduction	2. Literature review	3. Materials and Methods	4. Results	5. Discussion	6. Conclusion
What are you scientific questions? Why?	What is already known about it?	When, Where and How?	What have you discovered?	How do you explain your findings based on literature? Wich are the constraints in your research?	What can you conclude from your findings based on the discussion you have made?

MODULE 4 – STRUCTURING YOUR THESIS ALTERNATIVE FORMAT

MODULE 4 – STRUCTURING YOUR THESIS ALTERNATIVE FORMAT

Thesis presented as the colelction of the articles submitted or published during your doctorate/master.

Mandatory elements:

Introduction

Literature review

Materials and Methods

Published or submitted articles

Discussion

Conclusion
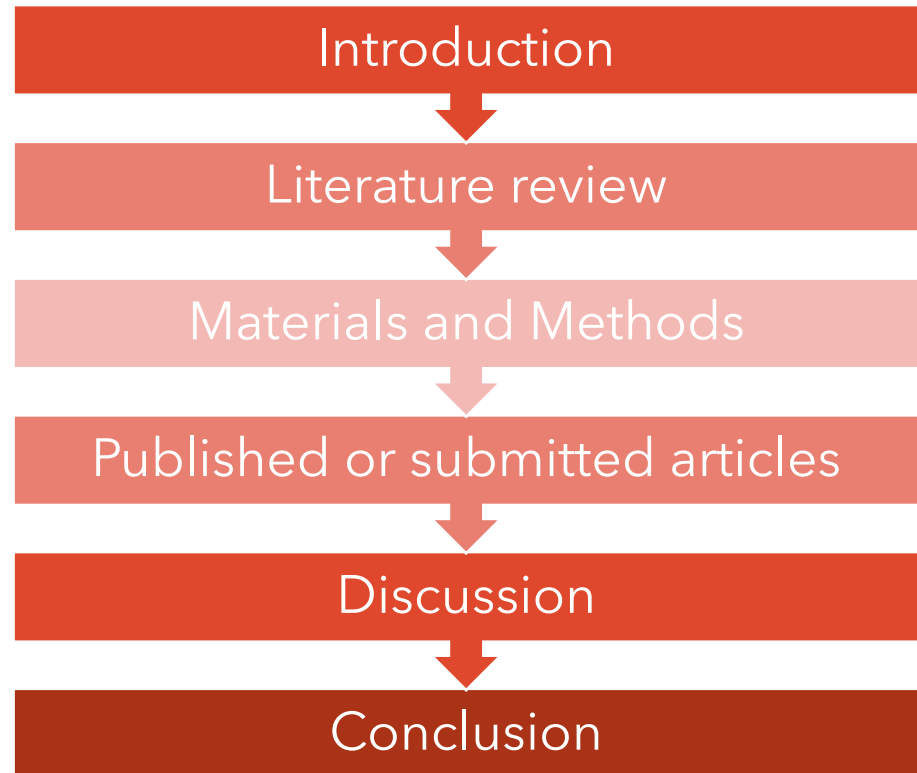
ALTERNATIVE FORMAT
MANDATORY ELEMENTS

1- Introduction

2 – Literature review

Write a comprehensive and expanded review of the subjects presented in your articles.

3 - Materials and Methods

Describe clearly the processes and techniques used in your thesis.

ALTERNATIVE FORMAT

MANDATORY ELEMENTS

4 – Published or submitted articles: From your papers, you need to include only:

. Introduction

. Materials and Methods

. Results and Discussions

. Conclusions
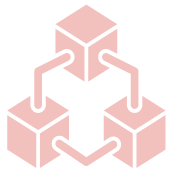
Do not include the abstract and the references of the individual articles.

All the absctracts must be synthesized in the general abstract of the thesis and the reference of each article must be compiled together in the References section.

ALTERNATIVE FORMAT

MANDATORY ELEMENTS

5 - Discussion

All the articles included must be discussed together in this section to provide a big picture of the thesis.
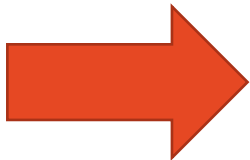
A general discussion is indicated (but not mandatory) when discussions are too fragmented in the articles included, and there is no clear connection between them. In these cases, it would be ideal to create an integrative general discussion that points out the connections between the different articles present in the thesis. The decision whether or not to include this general discussion is up to you and your advisor since in **the conclusion section** (mandatory), this integration between the articles must appear clearly.

ALTERNATIVE FORMAT
MANDATORY ELEMENTS

6 – Conclusion

Present the general conclusions corresponding to the objectives and hypotheses established, considering the conclusions found in the articles included in your thesis.

MODULE 4 – STRUCTURING YOUR THESIS

ALTERNATIVE FORMAT

⚠️ IMPORTANT

In articles already published, include the reference in a footnote.

The numering of figures, tables, equations, etc. found in each article must be adjusted to follow the numbering of each chapter.

MODULE 4 – STRUCTURING YOUR THESIS
ALTERNATIVE FORMAT

⚠️ IMPORTANT

If the published article is not open access, request authorization from the publisher for inclusion in the thesis.

The articles must be in the same language adopted for the thesis.

Articles included in the thesis can be from scientific journals, conference proceedings, and book chapters subject to peer review.

MENU MODULE 4

MODULE 4 – STRUCTURING YOUR THESIS ALTERNATIVE FORMAT

⚠️ **IMPORTANT**

Each article must constitute a separate chapter.

- Do not include articles as subsections of chapters.

Click here on _Rights link_:

- To get permission to include restricted articles in your thesis.

To get more information about the alternative format, consult the INPE handbook, available from:

- http://mtc-m16c.sid.inpe.br/col/sid.inpe.br/iris@1916/2005/05.19.15.27/doc/@publicacao.pdf

MODULE 4 – STRUCTURING YOUR THESIS

BACK MATTER

MODULE 4 – STRUCTURING YOUR THESIS
BACK MATTER

BACK MATTER

References

Glossary

Appendix

Annex

Index

MODULE 5 – NORMS AND STYLES

Formatting requirements

Use of AI

Citations

Figures, Tables, and Equations

References

Appendix and Annex

MAIN MENU

MODULE 5 – NORMS AND STYLES

FORMATTING REQUIREMENTS
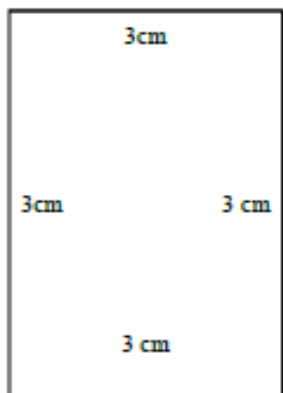
Paper size:

- A4 (21,0cm x 29,7cm)

Margins:

- 3cm (top, botton, left, and right)

Font:

- *Times new roman* 12, *Arial* or similar;

Spacing:

- 1,5 cm between lines and in the section titles that extend over two or more lines;
- Double space between the section title and the first paragraph, and between paragraphs;
- List of Figures, Tables and Abbreviations: Simple space.

MODULE 5 – NORMS AND STYLES

USE OF AI

Use of AI in text generation

- The use of AI for the automatic generation of textual contente (including, but not limited to introduction, literature rewiew, discussions or conclusion sections) **is strictly prohibited;**
- Should **plagiarism be detected**, full responsability shall rest with the author of the Thesis, and not with the company that provides or develops the AI.

MODULE 5 – NORMS AND STYLES

USE OF AI

Generation of Figures and Tables by AI

- The use of AI for the creation of graphics, figures, and tables is permitted, provided that the tool is explicity cited as the source and properly referenced.

- Exemple:

Source: OPENAI (2025).

MODULE 5 – NORMS AND STYLES

USE OF AI

Application of AI in research methodology

- In cases where AI is employed as part of the research methodology (e.g., data analysis, model generation), it is mandatory that:
- The tool utilized is explicitly identified;
- The application of the tool is described in detail within the methodology;
- The procedures adopted are reproducible.

MODULE 5 – NORMS AND STYLES

USE OF AI

Use of AI in linguistic and orthographic review

- The use of AI tools is permitted for gramatical, speling, and lexical review;

- The use of AI is also permitted to enhance the linguistic clarity of texts written in a foreign language.

ABNT - NBR 10520

- It is the attribution of authorship to a information that came from another source.

- Every citation used in your text must be included in the references.

MODULE 5 – NORMS AND STYLES

CITATION

Author-date

- In this study conducted in Smith (2019), these five stochastic distances…
- Similarity measure is a key aspect for archieving effectiveness in time series analysis and working with time series is very expensive in terms of processing cost (Ding et al, 2008).

Numeric style

- Therefore, the translocation of wild plant was tracked[18].

MODULE 5 – NORMS AND STYLES

CITATION

Citation up to three lines:

- In the study conducted in Smith et al. (2019), these five stochastic distances, plus the Euclidean distance, and the Wishart mixture model were compared.

Citation with more than three lines:

Cumuliform clouds develop from isolated air plumes that ascend buoyantly. Associated with cellular convection, cumulus clouds grow through positive buoyancy supplied via sensible heat transfer from the surface and latent heat released to the air during condensation, both of which make these clouds dynamic. Updrafts are of order 1 m.s -1 in developing cumulus but can be several tens of m.s -1 in organized mature cells like cumulus congestus (Salby, 1996, p. 277).

MODULE 5 – NORMS AND STYLES

CITATION

More information:

- Search in Citation FAQ
- If your question isn't answered, contact: pubtc@inpe.br.

MODULE 5 – NORMS AND STYLES

FIGURES AND TABLES

Figures and Tables are sequentialy numerated using arabic numbers, following the respective chapter number:

Figure 2.1, Figure 2.2, Figure 2.3, etc
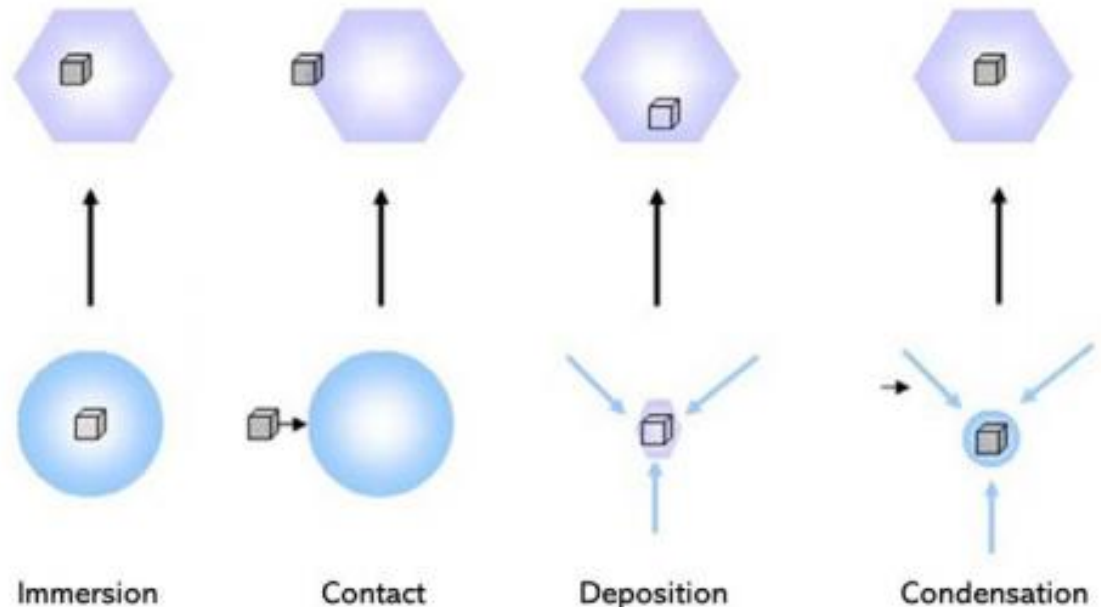
Table 2.1, Table, 2.2, Table 2.3, etc

FIGURES AND TABLES

EXAMPLES

Figure title with a single line: center aligned.

Figure source: center aligned with year between parentheses.

Figure 2.2 – Types of heterogeneous ice nucleation processes.

Immersion   Contact   Deposition   Condensation

Source: Adapted from Seifert *et al.* (2009).

FIGURES AND TABLES

EXAMPLES

Figure title with two or more text lines: justified text; the second line aligned with the beginning of the first line – not with the figure number.

Figure source: center aligned with year between parentheses

Figure 4.42 - Droplet velocities for Unlike Impingement of Gelled Ethanol x Liquid Water, Jet momentum 11 N, $2\theta = 75^o$ - Scatter and histogram of particles in Z direction (side view of Figure 4.32)
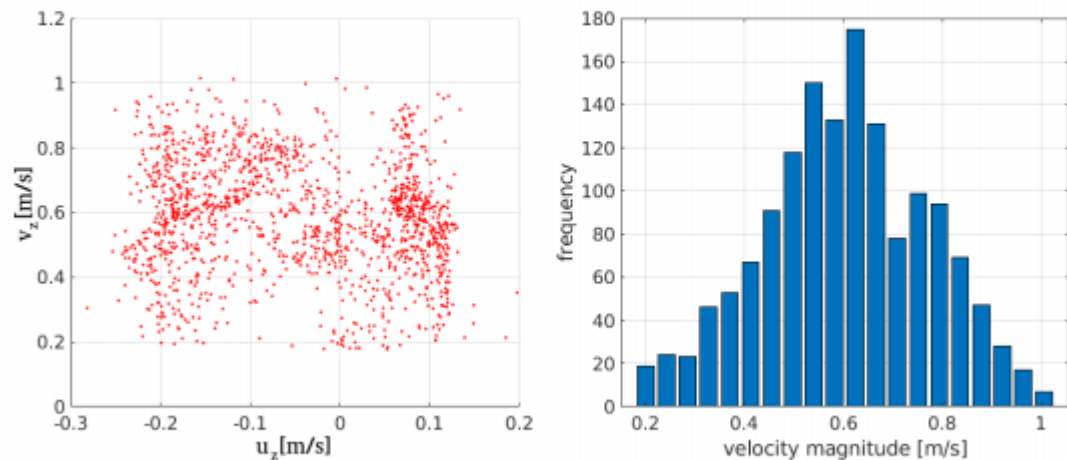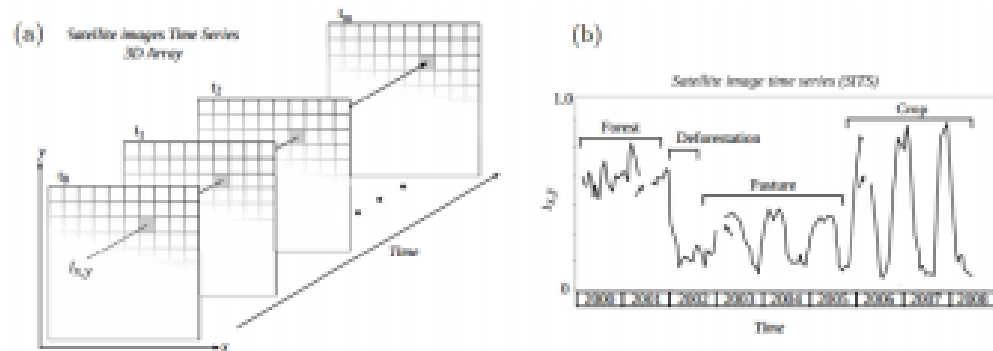

SOURCE: Author.

FIGURES AND TABLES EXAMPLES

Figure with caption and source: justified text

Figure 2.1 - Deriving Time series from Earth observation satellite images.

Based on a collection of satellite images, its possible to create a dimensional array of satellite images (a), and extract a vegetation index time series at a fixed (x,y) pixel location (b).

SOURCE: Maus et al. (2016)

FIGURES AND TABLES

EXAMPLES

Table title with a single text line: center aligned.

Table source: center aligned with year between parentheses.

Table 3.5 - Orbital Maneuvers.

	$\delta\theta$ (rad)	Δv (km/s)	T (s)
1	0.565637	1.07333	1660
2	0.445267	1.02667	1700
3	0.314329	0.99600	1800
4	0.118357	0.88733	2110
5	0.217551	0.85493	2250
6	0.241902	0.84267	2305
7	0.275673	0.80400	2550
8	0.278017	0.79867	2600
9	0.291305	0.78667	2705
10	0.289064	0.77867	2800
11	0.314594	0.76400	2910
12	0.337307	0.76212	2990

Source: Rocco; Souza; Prado (2003).

FIGURES AND TABLES

EXAMPLES

Table title with two or more text lines: justified text; the second line aligned with the beginning of the first line – not with the table number.

Table 2.3 - Interval of λ exponents based on the Box-Cox transformation for the normalization of geomorphometric data (y).

λ	-4.0	-3.0	-2.0	-1.0	-0.5	0.0	0.5	1.0	2.0	3.0	4.0
y	$1/x^4$	$1/x^3$	$1/x^2$	$1/x$	$1/\sqrt{x}$	log x	$\sqrt{x}$	x	x^2	x^3	x^4

SOURCE: Adapted from Csillik et al. (2015).

Table source: center aligned with year between parentheses.

FIGURES AND TABLES

EXAMPLES

Table with caption and source:
justified text.

Table 3.2 - Experiments with different configurations for CNN architectures.

	ResNet		GN (r)		GN (p)	
	t	OA	t	OA	t	OA
2c unb	3:40	85.4	2:33	98.7	2:33	98.7
3c unb	4:17	51.6	1:36	78.2	2:01	80.8
3c bal	2:54	34.0	0:45	73.6	0:45	75.0

Summary of experiments with different configurations for CNN architectures: ResNet (HE et al., 2016), GoogleNet — GN (SZEGEDY et al., 2015) — without pre-trained model (r) and GN using pre-trained model (p). The datasets are: imbalanced dataset considering two classes (2c unb), imbalanced dataset considering three classes (3c unb), balanced dataset considering three classes (3c bal). We show processing time t (format: h:mm) and Overall Accuracy (OA in percentage).

Source: Author's production.

FIGURES AND TABLES

Table/Figure that take up more than two pages of the text

At the end of the table/figure on each page, add the term "**to be continued**"

At the beginning of the following pages, include the table/figure number and replace the title with the expression. "**Continuation**"

On the last page of the figure, include the figure number and replace the title by the expression "**Conclusion**".

FIGURES AND TABLES

EXAMPLES

Table/Figure that occupies more than one page in the text

Table 2.2- Summary of studies exploring tree species classification using hyperspectral data. Works developed in tropical or subtropical forests are highlighted in gray. Those combining hyperspectral + LiDAR data contain the point density information at the 'Spatial resolution' column.

Study	Sensor	Spatial resolution (m)	Spectral resolution	Forest/ Country	Classifier	Number of species	Best accuracy (%)
Clark et al. (2005)	HYDICE	1.6	VNIR-SWIR (400–2500 nm; reduced to 30 bands selected)	Tropical Forest, Costa Rica	LDA, MLC, SAM	7	92
Jones et al. (2010)	AISA Dual	2 (0.4 points/m²)	VNIR-SWIR (429–2400 nm, reduced to 40 spectral bands)	Boreal Forest, Canada	SVM	11	72
Clark; Roberts (2012)	HYDICE	1.6	VNIR-SWIR (400–2500 nm; 210 bands)	Tropical Forest, Costa Rica	RF	7	87
Cho et al. (2012)	CAO Alpha	1.1	VNIR (384–1054 nm; 72 bands)	Savanna, South Africa	MLC	6	65
Dalponte et al. (2012)	AISA Eagle, GeoEye and ALS Optech ALTM	1 and 0.5 (8.6 and 0.48 points/m²)	VNIR (400–990 nm; 126 bands)	Temperate Forest, Italy	SVM e RF	7 species + non forest class	74
Naidoo et al. (2012)	CAO Alpha System	1.1 (1.3 point/m²)	VNIR (348–1054 nm, 72 bands)	Savanna, South Africa	RF	8	87.7

continue

Table 2.2- Conclusion.

Study	Sensor	Spatial resolution (m)	Spectral resolution	Forest/ Country	Classifier	Number of species	Best accuracy (%)
Tuominen et al. (2018)	UAV-FPI	0.08	VNIR-SWIR (409-1578 nm, 60 bands)	Arboretum, Finland	KNN+GA and RF	26	82.3
Maschler et al. (2018)	Hyspex VNIR 1600 (160SB)	0.4	VNIR (415-991 nm, 80 bands)	Temperate Forest, Austria	RF (object approach)	13	91.7
Dabiri; Lang (2018)	APEX	2.5	VNIR-SWIR (413-2451 nm, 288 bands)	Temperate Forest, Austria	RF	6	90
Marrs; Ni-Meister (2019)	G-LiHT imager	1 m (6 points/m²)	VNIR (418-918 nm, 114 bands)	Temperate Forest, USA	SVM, CN2 rules, ANN	10 and 15	67 and 59
Sothe et al. (2019a)	UAV-FPI	0.11 (35 points/m²)	VNIR (506-819 nm, 25 bands)	Subtropical Forest, Brazil	SVM	12	72.4
Fricker et al. (2019)	NEON AOP	1 m	VNIR-SWIR (280- 2510, 426 bands)	Temperate Forest, USA	CNN	7	87

Note: ANN= Artificial Neural Network; CNN= Convolutional Neural Network; GA= Genetic Algorithm; KNN= K-nearest neighbor; LDA= Linear Discriminant Analysis; MDA= Multiple Discriminant Analysis; MLC= Maximum Likelihood Classifier; MLP= Multilayer Perceptron; PLSDA= Discriminant Analysis based on Partial Least Square; QDA= Quadratic Discriminant Analysis; RDA= Regularized Discriminant Analysis; RF= Random Forest; SVM= Support Vector Machine; SWIR=short-wave infrared.
Source: Author's production.

FIGURES AND TABLES

EXAMPLES

To more examples of figures and tables, access:

http://urlib.net/ibi/8JMKD3MGP3W34R/45BABTE

EQUATIONS AND FORMULAS

Examples of math equations and formulas

$$Z_{TE} = \frac{j\omega\mu}{\gamma} = \frac{\omega\mu}{\beta_g} = \sqrt{\frac{\mu}{\varepsilon}} \frac{1}{\sqrt{1 - f_{cmn}^2/f^2}} = \sqrt{\frac{\mu}{\varepsilon}} \frac{1}{\sqrt{1 - \lambda^2/\lambda_{cmn}^2}} = \eta \frac{\lambda_g}{\lambda} \qquad (2.41)$$

$$S_{11} = R_1^2 \left[\frac{\Gamma(1 - T^2)}{1 - \Gamma^2 T^2} \right] \qquad (2.48)$$

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Books:

SURNAME, Initials. **Title of book.** Edition. Place of publication: Publisher, year of publication.

BOYD, T. J. M.; SANDERSON, J. J. **Physics of plasmas**. 2.ed. Cambridge: Cambridge University Press, 2003.

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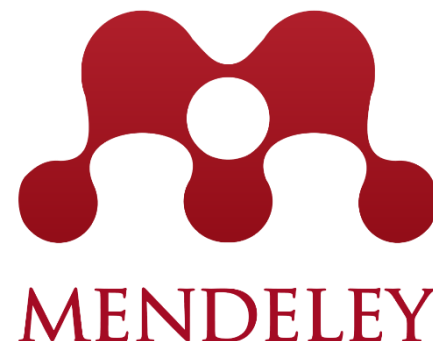
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Both appendices and annexes must be present in the thesis contents

Appendix

- These are texts created by the thesis author to complemente his/her arguments.
- Appendices are included after references

Annex

- These are documents created by others and used by the thesis author.
- Annexes are included after the appendices.

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- LaTeX

- MS Word

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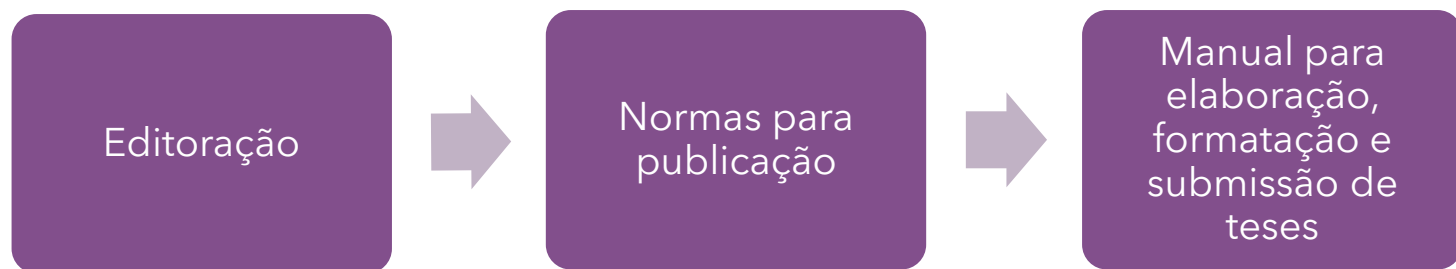
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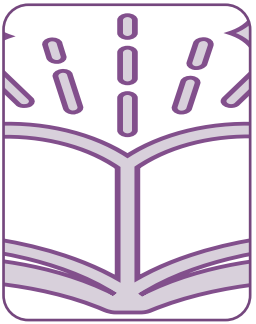
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https://www.overleaf.com/latex/templates/modeloinpe-2022/wgvyqymtcnrk

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