

Final Thesis for the Master Course in Chemical Engineering: Guidelines for drafting Summary and Thesis Report

Summary

Il file, in *formato word*, deve essere inviato via e-mail dal proprio indirizzo e-mail istituzionale alla Biblioteca Eugenio Mariani (bibliotecaeugeniomariani@uniroma1.it) entro le scadenze previste per la seduta di laurea.

Il file, oltre al riassunto, deve contenere i seguenti dati:

- titolo della tesi, matricola del laureando, nome e cognome del laureando e del relatore/tutor;
- un recapito telefonico;
- data della seduta di laurea e corso di laurea (Magistrale, Vecchio Ordinamento Ingegneria Chimica o Ingegneria dei Materiali).

Verrà inviata una ricevuta a conferma della ricezione del file.

The summary must be produced as a .doc file, with a maximum length of 1 page.

The lay-out of the document is the following:

Author: *Surname (or Family name) – Name (or Given Name)* [in this order]

[blank line]

Tutor: *Surname name* [in this order]

[blank line]

Title:

Title of the thesis

[blank line]

Summary:

Text of the summary, organized in the following points:

1) Nature of the problem addressed

Text.

[blank line]

2) Motivation and urgency for addressing the problem:

Text.

[blank line]

3) Contribution to the solution of the problem:

Text.

[blank line]

4) Notes about complexity and original solutions:

Text.

Please follow exactly the instructions below:

- use a single font and a single size (eg Arial 12 points), without parts in italics, bold or underlining; do not insert images;

- surnames and names (always put the surname first) must be written with a capital initial only; the title and text of the summary must also be written in lowercase with the exception of the first letters of the paragraphs and proper names or places. The names of the substances must also be written in lowercase; acronyms or formulas should be capitalized.

Example of Summary

Author: Surname Name

Relatore: Surname Name

Title:

Design of an ethylene recovery unit of off-gas from the polymerization process.

Summary:

1) Nature of the problem addressed:

The production of polyethylene on an industrial scale, started in 1939, has always been accompanied by the problem of the loss of a significant fraction of the ethylene loaded into the polymerization reactors. The main issue of this thesis report is the development of a suitable plant solution allowing to limit such loss.

2) Motivation and urgency for addressing the problem:

The project stems from the analysis of three patents developed for the separation of light paraffins from light olefins, the purification of ethylene and the removal of carbon dioxide from hydrocarbon mixtures, from which useful information has been extracted for the design of the production unit, with recovery of the monomer from the purge gas.

3) Contribution to the solution of the problem:

The design carried out was divided into subsequent phases. Starting from the analysis of a typical gaseous stream effluent from the polymerization plant, the sequence of operations for its purification was developed, maximizing the concentration of ethylene and the flow rate of the recovered product. The second step consisted of engineering the process and the third step dealt with the design calculations relating to each individual equipment. In addition, following a preliminary mechanical design of the entire plant, an economic estimate was made, with an accuracy of $\pm 10\%$, by examining investment costs and operating costs. The feasibility and effectiveness of the unit were therefore demonstrated as well as the possibility of obtaining a substantial economic benefit. This latter aspect was highlighted by processing a cash flow diagram which shows an investment payback time of approximately 6 years, a value lower than the average value for plants comparable to the one examined.

4) Notes about complexity and original solutions:

The distillation plant and the refrigeration cycle with propylene were developed using process simulators, with particular complexity in integrating this service with other operations. The thermal recoveries were optimized by introducing high efficiency equipment and the complex selection was made for the CO₂ removal system, selecting the most convenient among 3 alternatives. The PFD, the P&ID, the Detailed Plot Plan and the Data Sheets with the technical details of all the equipments have been elaborated and issued. This documentation certifies the originality of the process and of the work performed.

Final Thesis Report

Preparing the final thesis report

The official copy of the thesis report must be prepared in electronic format.

The **copy of the thesis in pdf must be uploaded to the Infostud platform**, as required by the University regulations, and will be delivered to the Graduation Committee according to the procedure specified below. The file, in pdf format, must contain the complete thesis report (including the title page, see fac-simile available in the Download area).

The **presentation of the thesis for the final discussion** must be prepared in Power Point (or equivalent), and a readable pdf copy must also be produced (avoid animations or text overlays).

A **printed copy of the thesis** must be made available to the Graduation Committee during the discussion and will be returned to the candidate afterwards.

Delivering the final thesis report

The candidate will be asked, within the deadlines set for the graduation session:

- a) **to upload the pdf copy of the report to the Infostud platform.**
- b) **send the pdf copy of the report to the Library of the Department via e-mail from the student institutional e-mail address to the following address bibliotecaeugeniomariani@uniroma1.it.**