PROJECT HANDBOOK for MSCS Program

Myungsook Klassen, Ph.D
CALIFORNIA LUTHERAN UNIVERSITY
GRADUATE PROGRAMS
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This handbook is modified for the MSCS specification from the handbook originally written by following faculty
HERBERT E. GOOCH III, PH.D., EDITOR
JOAN BLACHER, PH.D.
STEVE KISSINGER, PH.D.
MILDRED MURRAY-WARD, PH.D.
LEANNE NEILSON, PSY.D.

The original can be found at
http://ww2.clunet.edu/documents/graduate/ThesisProjectHandbook.pdf

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INTRODUCTION

Purpose of Handbook

California Lutheran University's graduate students in the MSCS program are required to complete a thesis or a project as part of their master's degree program. Both the thesis and project are forms of research that explore, develop, and organize materials relating to a specific problem within a field of study. This handbook will serve to guide students through the process of conducting and reporting their research. It will provide necessary background information as well as University requirements which must be completed by the student before the thesis or project is accepted by the University.

This handbook is modified from the California Lutheran University "Thesis Project Handbook" to the MSCS specification. In instances where the two differ, the MSCS Handbook takes precedence over the CLU handbook.

Purpose of Scholarly Research

Scholarly research requires the skills of inquiry which must be demonstrated by all students. As a participant in research activities at CLU, the University expects you to develop the abilities to:

1. create or contribute empirical knowledge to the existing body of information in a discipline;
2. carry out systematic inquiry;
3. use tools of research including analyze existing research, developing and implementing appropriate methods, analyzing data and handling the logistics of conducting a research study;
4. work with faculty or other professionals on a research project;
5. use scholarly writing techniques.

Research may be a thesis or a project. While both are important contributions to the body of knowledge in a discipline, they have different purposes.

Definition of Thesis

The thesis is the result of an original investigation that creates new knowledge within a discipline. It is an extensive research on a current and advanced topic, original in either its content or mode of integration. It documents the process, the products, and assimilation of an investigative piece of work and is generally composed of the following elements:

1. identification of a problem;
2. background and literature review of existing information about the problem;
3. methods to be used for obtaining the needed knowledge;
4. resulting new knowledge;
5. interpretation of the new knowledge.

Definition of Project

The project is an applied study that combines a specific topic with actual problems or issues in a professional setting. The project generally involves the development of a new product (In the case of computer science, software implementation is a typical product). The project is generally composed of the following elements:

1. identification of a problem that could be solved by a practical solution;
2. background literature review of existing information about the problem;
3. methods to be used for developing and testing a product to solve the problem;
4. resulting new product;
5. evaluation of the new product.

PROCEDURES

The following are suggested steps in the process of completing a thesis or project. The steps are only suggestions but are strongly recommended so that the thesis or project may be completed in an expedient and rewarding manner.

Phase 1	Meet with faculty members to discuss the following: • General thesis or project overview; • Feasibility of the thesis or project; • Identify a potential committee chair; • Development of an action plan or timeline; Select and contact potential committee chair and two members.
Phase 2	Meet with the committee chair to discuss the following: • Develop proposal; • Submit a full draft of the proposal to the committee members at least one week prior to the term to enroll CS 599 course starts.(Appendix H); • Conduct proposal defense with the committee; Redesign the proposal as needed.
Phase 3	Obtain appropriate signatures for Thesis or Project Memorandum of Acceptance (Appendix G). File Memorandum form with the Graduate Enrollment Services Office. Enroll in CSC599 Thesis/Project course.
Phase 4	Implement/Test the proposed solution. Meet regularly with the committee chair to discuss the progress.
Phase 5	Write the project report (reference Format & Documentation Guideline section of this handbook). Meet with the committee chair to discuss the report. Make required changes.
Phase 6	Submit full draft to each committee member at least one week before the final defense meeting. (The student must re-register if the final defense is not held within a year of the date when the thesis or project was started.)
Phase 7	Meet with full committee for final oral defense of thesis or project to be conducted no later than two weeks prior to the end of the term in which the student expects to graduate.
Phase 8	Make required changes as suggested by committee members. Submit manuscript to the Committee Chair for final editing. Make required changes as suggested by committee members. Obtain required signatures on at least three original signature pages. Make copies of entire document.
Phase 9	Submit minimum of three copies for binding with original signatures pages and binding fees to the Office of Graduate Enrollment Services which will obtain signature of the Dean of the Arts and Sciences. Additional copies may be submitted at this time along with binding fees if the student wants one or more personal copies.

FORMAT AND DOCUMENTATION GUIDELINES

I. Preliminary Sections

These pages provide information on the approval, background, summary, and organization of the study.

Title Page

This page provides the name of the thesis/project, names of the university and school or department, and date of completion. The title page should be prepared in accordance with the sample page found in Appendix A. The date at the bottom of the page is the month and year the degree is awarded. The title page is unnumbered but is counted as page "i."

Approval Page

This page provides the name of the author and blank lines for the signatures of the committee members and the Dean of the School of Arts and Sciences. The pages are signed when the members and Dean determine that the thesis or project is complete. The approval page should comply with the page form found in Appendix B. It should bear original signatures for all copies. The date at the bottom of the page is the date the degree is awarded; however, the page is not counted in the numbering system.

Dedication Page

This optional page contains a brief dedication to the individual(s) whom the author wishes to honor. If included, this page is numbered as page "ii" (lower case Roman numeral).

Acknowledgement

This optional page lists persons and/or institutions whom the author wishes to thank for their assistance in completing the thesis or project. Such assistance can be provision of personal, financial, or moral support, or access to data sets or subject populations. A brief statement as to the type of assistance provided may follow each person or institution named. If included, this page continues the lower case Roman numeral sequence begun above.

Abstract

The abstract provides the reader with a brief, but complete, summary of the entire study, including the rationale, procedures, subjects, and results. The abstract should be one page in length. A sample abstract is contained in Appendix C.

Table of Contents

These pages provide a list of the major sections of the study and their page location. Included is the location of the list of tables, lists of figures, chapters, references and major sections within chapters, and appendices, that is, all the elements of the thesis or project. The table of contents pages continue the lower case Roman numeral sequence begun with the thesis or project title page. See Appendix D.

Lists of Tables or Figures

These pages provide lists of the numbers and titles of tables or figures and their page locations. Tables and figures are placed in separate lists that include the number of each table or figure as it appears in the text, the title of the table or figure, and the page number where the table or figure is located. These pages follow the table of contents and are numbered with lower case Roman numerals consecutively following the table of contents. See Appendix E for an example.

II. Body of Document

Each chapter should start with a page like the one described in Appendix F. Chapter I begins pagination with an Arabic numeral "1" placed in the upper right corner. Citation should be written with angle brackets and with an appropriate reference list number (For instance, Arbib[2] describes NP problems that…).

Chapter I: Introduction

This should start with the rationale for your study: what questions are being asked, or what indicates the need for a new solution. Then move on to the purpose of your study, its significance, its theoretical framework, a brief overview of methodology, assumptions and limitations.

Chapter II: Literature Review

This chapter presents a more detailed history of the area under study and a detailed, well organized presentation of relevant literature. The function of this chapter is to demonstrate that the researcher has examined the work of others, built on that work, developed a sound rationale for the present study, and may include answerable research questions.

Chapter III: Methods

This chapter presents the methodology used to complete the study. It describes each aspect of work performed in detail to allow others to evaluate the results and duplicate the work if necessary. Any software and hardware used should be described. Explain how you actually implemented your design and made it work.

Chapter IV: Results

This chapter presents data analyses and results for research questions previously posed. Present your results in raw data, summarized and clarified in tables and figures. Explain as clearly as possible in the text what you found or built. You may also include sample runs, performance analysis, and comparisons.

Chapter V: Discussion and Recommendation

This chapter concludes the study. It is used to summarize and draw conclusions based on the work done. Discuss the implications for use (possible applications), give suggestions for further research, and remark on the study's contribution. Were research objective met? How could the work have been improved? How can this work be extended further? The writer makes recommendations for changes and future study of this topic.

III. Concluding Sections

Reference List

This section lists all of the literature cited in the study. References are presented in alphabetical order by author's last name according to the format required by the ACM bibliography reference format.

Appendices

This section presents documents that were of special import to the study. These may include materials developed, instrumentation, consent form, letters, etc. The appendices should be placed after the reference list and organized in the order of reference in the body of the manuscript. Appendices may include photographs, graphs, charts, screen shots, and program listings. They should conform to margin requirements, and each appendix should be labeled separately beginning with the letter "A." The appendices continue the Arabic numeral sequence from the reference list pages.

IV. Other Guidelines

1. The thesis or project drafts may be typed on regular typing paper with the correct margins (see the template in Appendix F), but the final draft must be typed on 20-pound paper composed of 25 percent rag (cotton).
2. All typing of text, tables, and illustrations must be placed within the prescribed margins.
3. Figures and tables should be incorporated at the appropriate point in the text. Short tables may appear on a page with text. Each long table and each figure is placed on a separate page immediately after the page on which the table or figure is first mentioned.
4. All pages except for the title page and signature page must be numbered. The page numbers appear in the lower center of the page for lower case Roman numerals and the upper right-hand corner of the page for Arabic numerals. Do not use hyphens, periods, or parentheses with any page number. See Appendices A through F for examples.
5. All final copies must be typed using a typewriter or word processor. The type face should be legible and consistent throughout the paper.
6. Generally, text must be double-spaced throughout the paper, including lengthy quotations. Single spacing can be used for table titles and headings, figure captions, references (but double spacing is required between references), footnotes, and long quotations. Judicious triple-or quadruple- spacing can be used to improve appearance, for example after chapter titles, before major subheadings, before and after tables in the text.
7. Right margins are not justified.
8. No correction using fluid or tape is permitted.
9. The thesis or project should be proofread BEFORE final submission to the Committee Chair. Documents containing errors will be returned to students for correction before final acceptance.

10. All copies of the document submitted to the Office of Graduate Enrollment Services must have ORIGINAL approval signatures. Other copies submitted for binding for personal use need not have original approval signatures.

REGISTRATION

Enrollment in CSC599 Course

Students who are writing a project or a thesis must register for CSC 599. See your own program requirements for details.

At the time of registration, the student must complete a Memorandum of Acceptance (See Appendix G). This form indicates that the student's department and committee have accepted the student's research topic. It contains a summary of the proposed research and the signatures of the department chair, the committee members, and the Dean of the School of Arts and Sciences.

Registration for CSC599 may not be undertaken until the student has completed the specified number of credit hours toward the master's degree. If the project or thesis is not complete within one calendar year from the date of enrollment for CSC599, then the student must re-register for the course and do so annually until the project or thesis is accepted. The student must complete the thesis or project within the five years of beginning courses toward the master's degree. The CSC599 course is graded by the Committee Chair as part of the degree course requirements. The grade is submitted at the time the student submits the final draft for binding. The CSC599 course has a limit up to one year of validity from the beginning of the term of registration. A grade of I (Incomplete) will be assigned for each term in which the student is enrolled in CSC 599 but his/here requirements for completion are not met.

Important Dates

1. The student must present the thesis or project to the committee at least one week prior to any meeting in which the manuscript is to be discussed.
2. The final defense must be arranged and conducted at least two weeks prior to the end of the term in which the student expects to graduate.
3. To obtain a master's degree, the thesis or project must be completed within five years from the initial enrollment in master's courses.

Meetings

1. Proposal Defense Meeting
   When the chair has approved the student's research design proposal, a proposal defense meeting will be scheduled at the request of the student to be convened by the Chair. The student schedules the date, time and location. All committee members are to be present, and the student will provide each member with a copy of the proposal at least one week prior to the meeting date. The purpose of the meeting is to discuss the research design and modifications which might be needed. Following the proposal defense meeting, the student is also expected to gain approval from the Research and Review Committee (RRC).
2. Progress Meetings

Students must meet with the chair or other committee members throughout the life of the project or thesis.

3. Final Defense Meeting
   The student is ready for the final defense meeting when the Chair has determined that the manuscript is in final draft form. At least one week prior to the meeting, the student will provide the Chair and each committee member with a final draft form of the manuscript. The meeting should be attended by all committee members. The final defense meeting is open to all faculty members, student body, and other invited guests.

Committee Membership

The committee is composed of a Chairperson and two other members, one of whom must be a full-time faculty member from the student's department or school. The requirements for each are listed below:

Committee Chair

The chair must have knowledge of the area under investigation for the project or thesis. Must be a full-time faculty member of the department. Must be chosen with the approval of the program director.

Committee Members

Members must have knowledge of the area under investigation for the project or thesis. Must be full-time faculty, part-time faculty, or a professional in the community with at least a Master's degree. He or she must be chosen with approval of program director and committee chair.

Final Product

1. Committee Approval

When the student has successfully defended the thesis or project, all committee members sign the approval page. (See Appendix B.)

2. Editing

When the thesis or project has been approved by the committee, the student will submit the final draft of the completed manuscript to the Chair of the committee for final editorial review.

3. University Approval

Two copies and the original manuscript (three in total) must be printed on 20-pound paper composed of 25% rag or cotton fiber, and all copies must have original signatures. After the signatures have been obtained, the student presents the three manuscripts to the Office of Graduate Enrollment Services for binding. The signature of the dean of the School Arts and Science is obtained by the Graduate Enrollment Services Office at this time. For Education work, the appropriate dean is the Dean of the School of Education, and for

Psychology and Public Administration, the appropriate Dean is the Dean of the School of Arts and Sciences. Students may also present additional personal copies for binding at this time. There is a binding fee due at this time payable per manuscript to California Lutheran University.

4. Binding

The University binds at least three copies of the thesis or project. One is placed in the University Library, one is placed in the student's department, and one copy is given to the Committee Chair. Binding fees are paid by the student when all copies are submitted to the Office of Graduate Enrollment Services.

5. Submission of Grade

At this time, the student requests the Graduate Enrollment Services Office to confirm receipt of final drafts to the Committee Chair. Upon confirmation, the Chair then submits to the University Registrar a grade for completion of the student's 599 coursework.

ROLES AND RESPONSIBILITIES

Each individual involved in the process of developing a thesis or project has certain tasks for which he/she is responsible. These are listed by role below.

Committee Chair

1. Assure appropriate level of inquiry into the problem.
2. Assist in the selection of committee members.
3. Develop with the student a schedule of activities for the completion of the project or thesis.
4. Review proposal procedures with the student and approve research methodologies.
5. Call together and preside over all formal committee meetings.
6. Keep the thesis or project on schedule.
7. Delegate tasks to other committee members.
8. Review contents; approve the remaining chapters.
9. Coordinate proofing and editing of the document. Contact all committee members before the final defense to solicit comments and suggestions for the final document.
10. Assure that CLU publication standards are upheld.
11. Submit final grade when in possession of formal confirmation from the Office of Graduate
12. Enrollment that all approved, final drafts have been submitted for binding.
13. Submit notice of completion of thesis or project to the Office of the Provost with a request to release all Committee Stipends.

Committee Members

1. Attend scheduled meetings which include proposal defense meeting, progress meetings as needed, and final defense meeting.
2. Provide feedback on thesis or project drafts.
3. Provide individual advice or consultation with student as requested.
4. Review contents; make suggestions for revision or modification of Chapters IV and V.
5. Proof and edit document.
6. Assist the Committee Chair as requested.

The Student

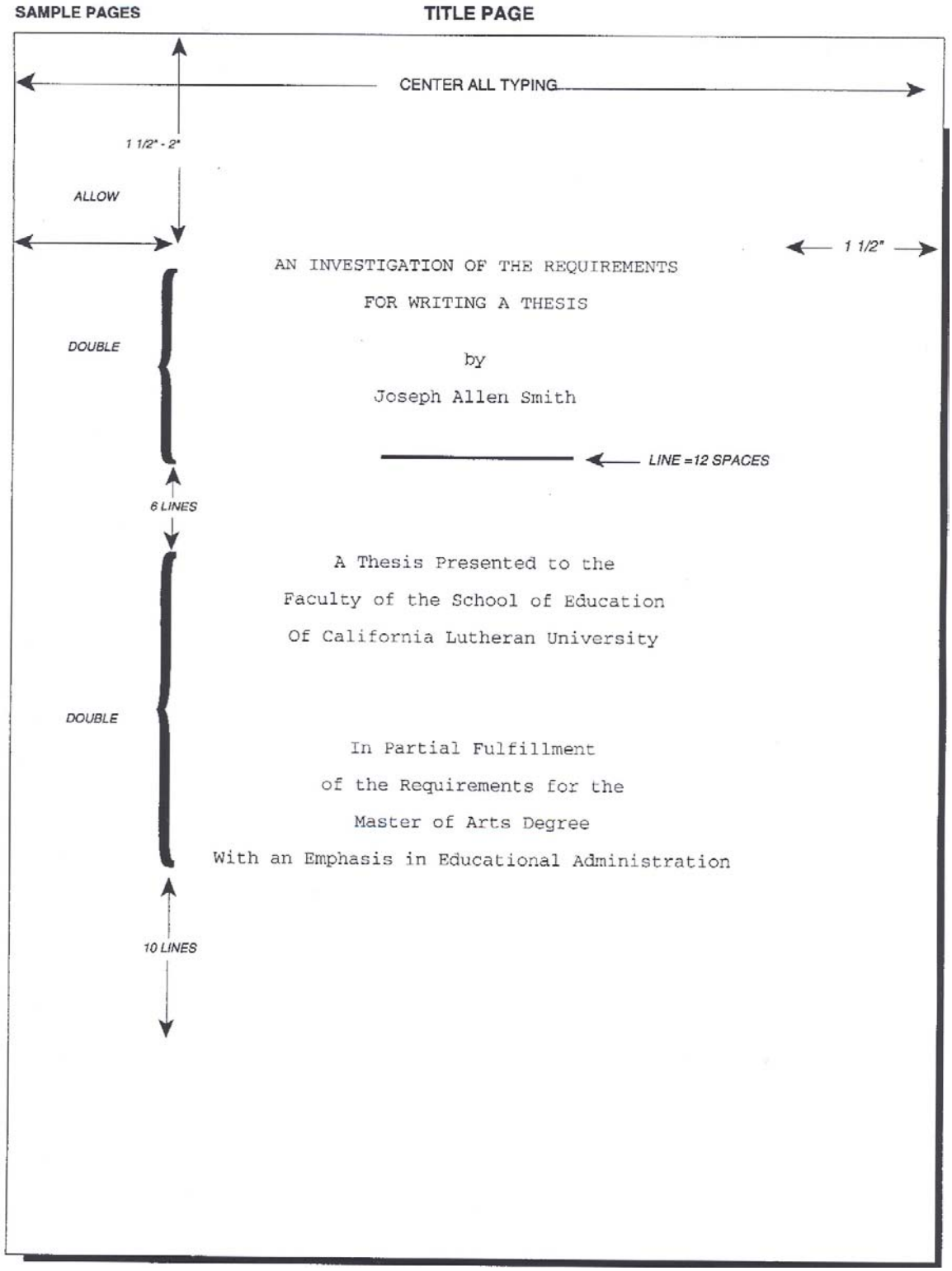
1. Be aware of the responsibilities of the Chair, committee members, and student.
2. Complete Thesis or Project Memorandum of Acceptance and register in 599 course, or 599C for continuing semesters.
3. Fulfill CLU requirements for completing a thesis or project, including proper editorial format.
4. Arrange for committee meeting dates, times and locations.
5. Adhere to planned timelines.
6. Provide drafts of all documents to all committee members at least two weeks before a scheduled meeting.
7. Attend regular meetings with the chair.

8. Make notes of all meetings.
9. Seek the advice of individual committee members.
10. Keep entire committee informed of progress.
11. Make revisions as required.
12. Submit the thesis or project to the committee for final defense and approval.
13. Submit the approved thesis or project to the Office of Graduate Enrollment Services to obtain the signature of the dean of the Arts and Sciences, assignment of 599 course grade and credit from Committee Chair, and binding of thesis or project copies.

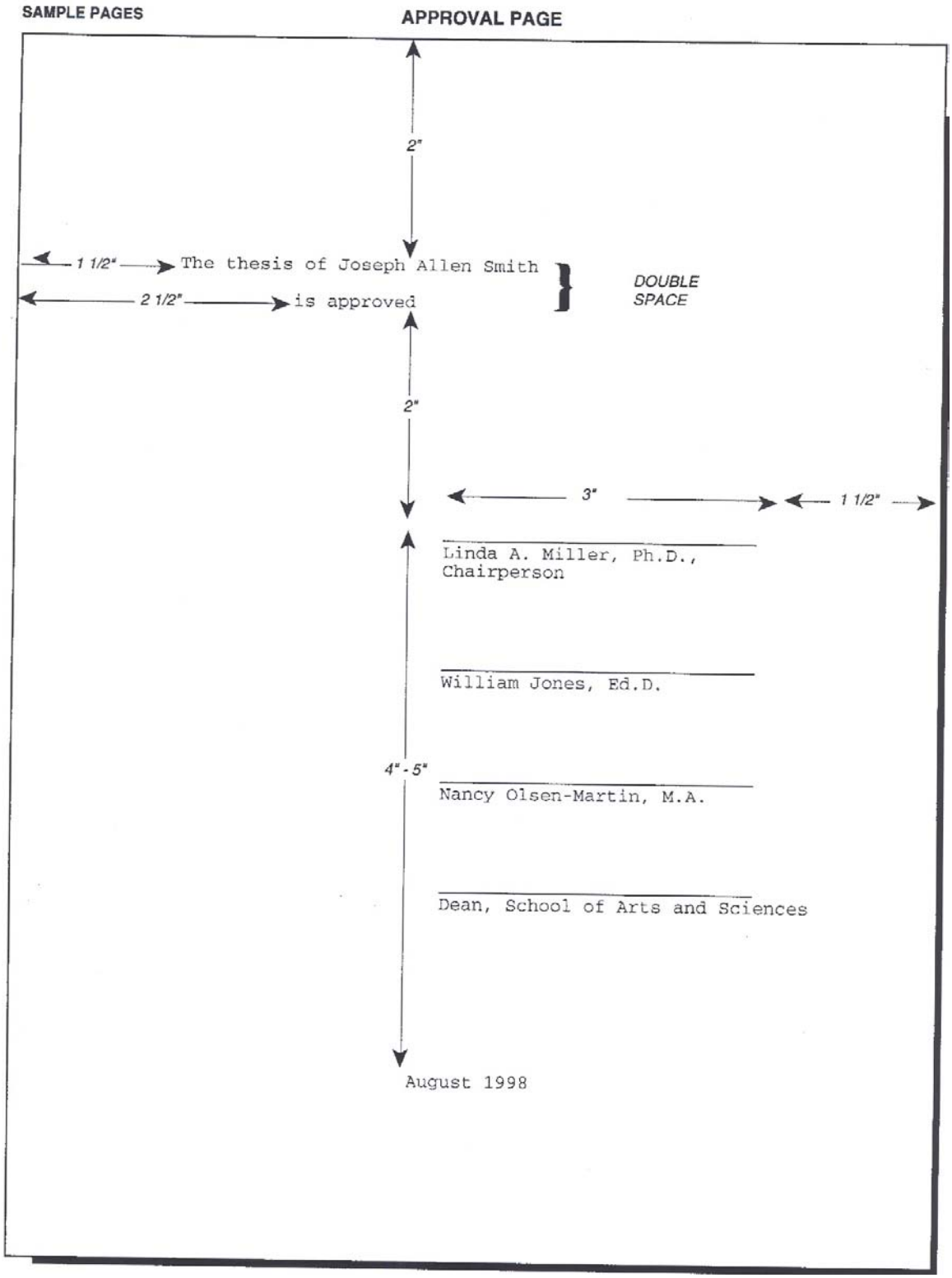
REFERENCES EXAMPLE

1. Albrecht, "Measuring Application-Development Productivity," *Programmer Productivity Issues for the Eighties,* 2nd ed., C. Jones, ed., IEEE CS Press, 1981, pp. 34-43.
2. M.A., Arbib, ed., *The Handbook of Brain Theory and Neural Networks*, MIT Press, 1998.
3. B. Fagin, *A Parallel Execution Model for Prolog*, doctoral dissertation, Dept. Computer Sciences, Univ. California, Berkeley, 1987.
4. Kaplan, "From Baghdad to Manila: Another Lousy Analogy for the Occupation of Iraq, *Slate*, 21 Oct. 2003; http://slate.msn.com/id/2090114/.
5. Newman and R.F. Sproull, *Principles of Interactive Computer Graphics,* McGraw-Hill, 1979, p. 402.
6. I.E. Sutherland, R.F. Sproull, and R.A. Schumaker, "A Characterization of 10 Hidden-Surface Algorithms," *ACM Computing Surveys,* vol. 6, no. 1, Mar. 1974, pp. 1-55.
7. M. Weiser, "Program Slicing," *Proc. 14th Int'l Conf. Data Eng.* (ICDE 98), IEEE CS Press, 1998, pp. 439-449.
8. Y. Yao et al., "Web Intelligence (WI): Research Challenges and Trends in the New Information Age," *Web Intelligence: Research and Development,* LNAI 2198, N. Zhong et al., eds., Springer-Verlag, 2001, pp. 1-17.

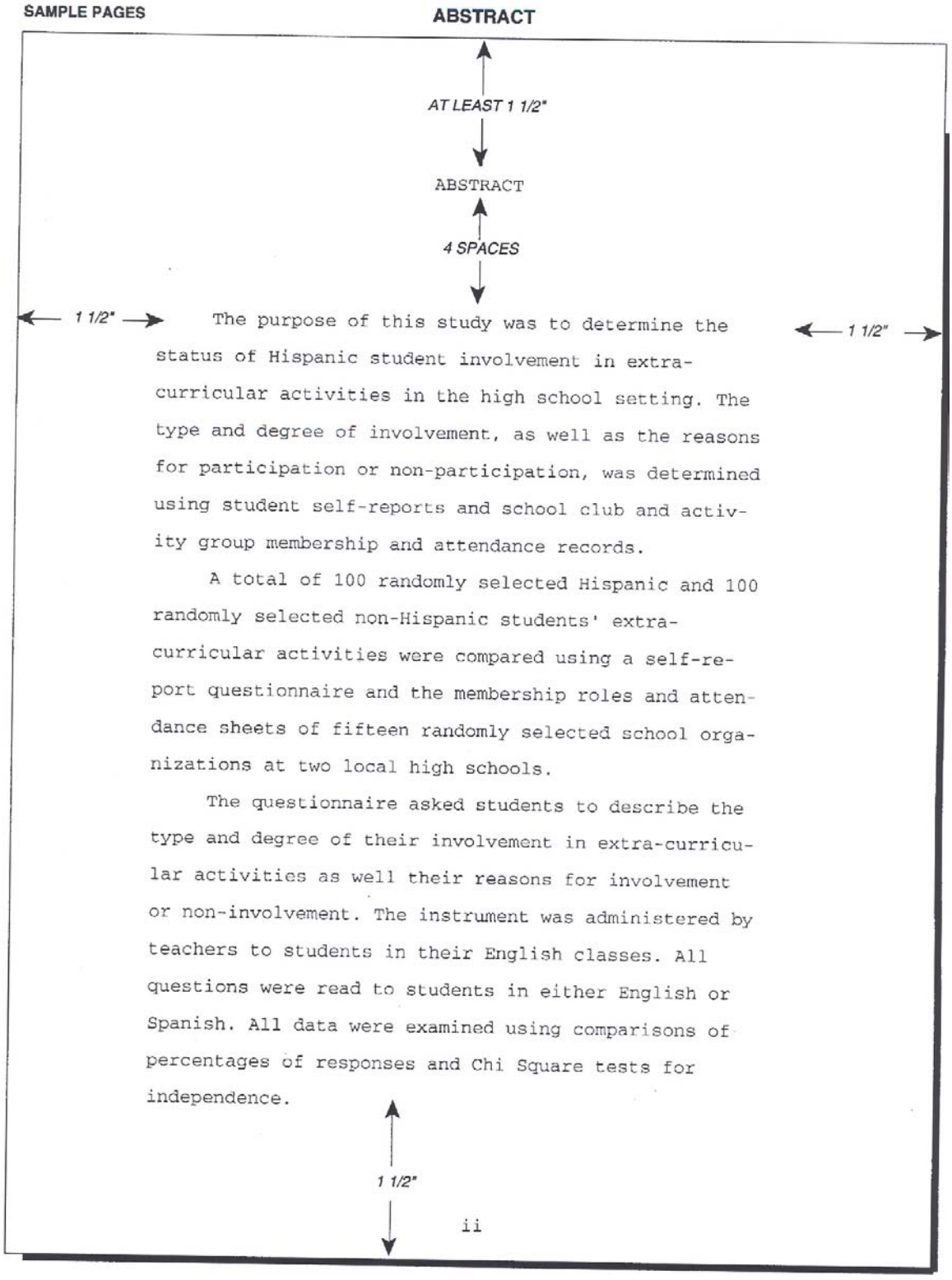
Appendix A: Title Page



Appendix B: Approval Page



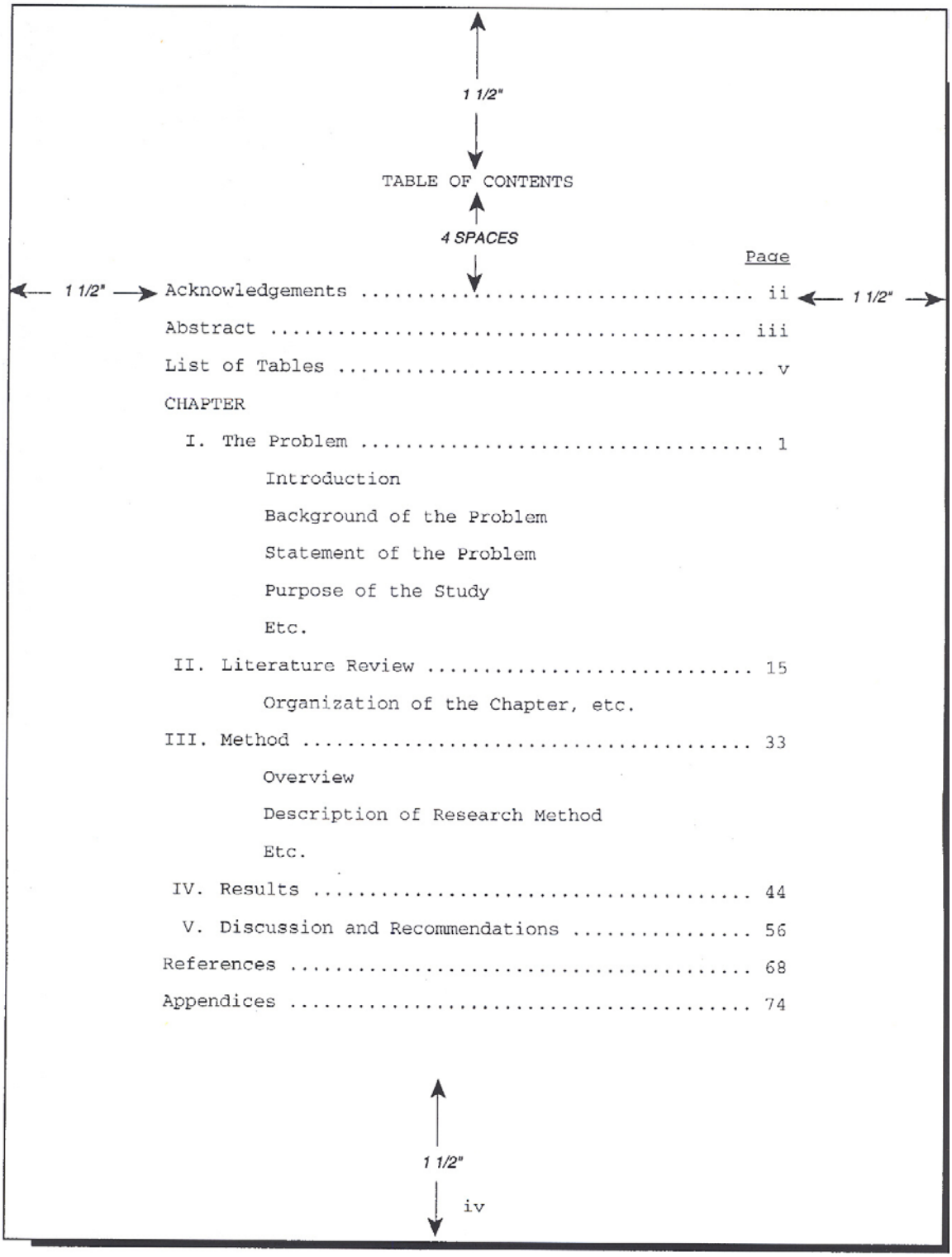
Appendix C: Abstract



Appendix D: Table of Contents

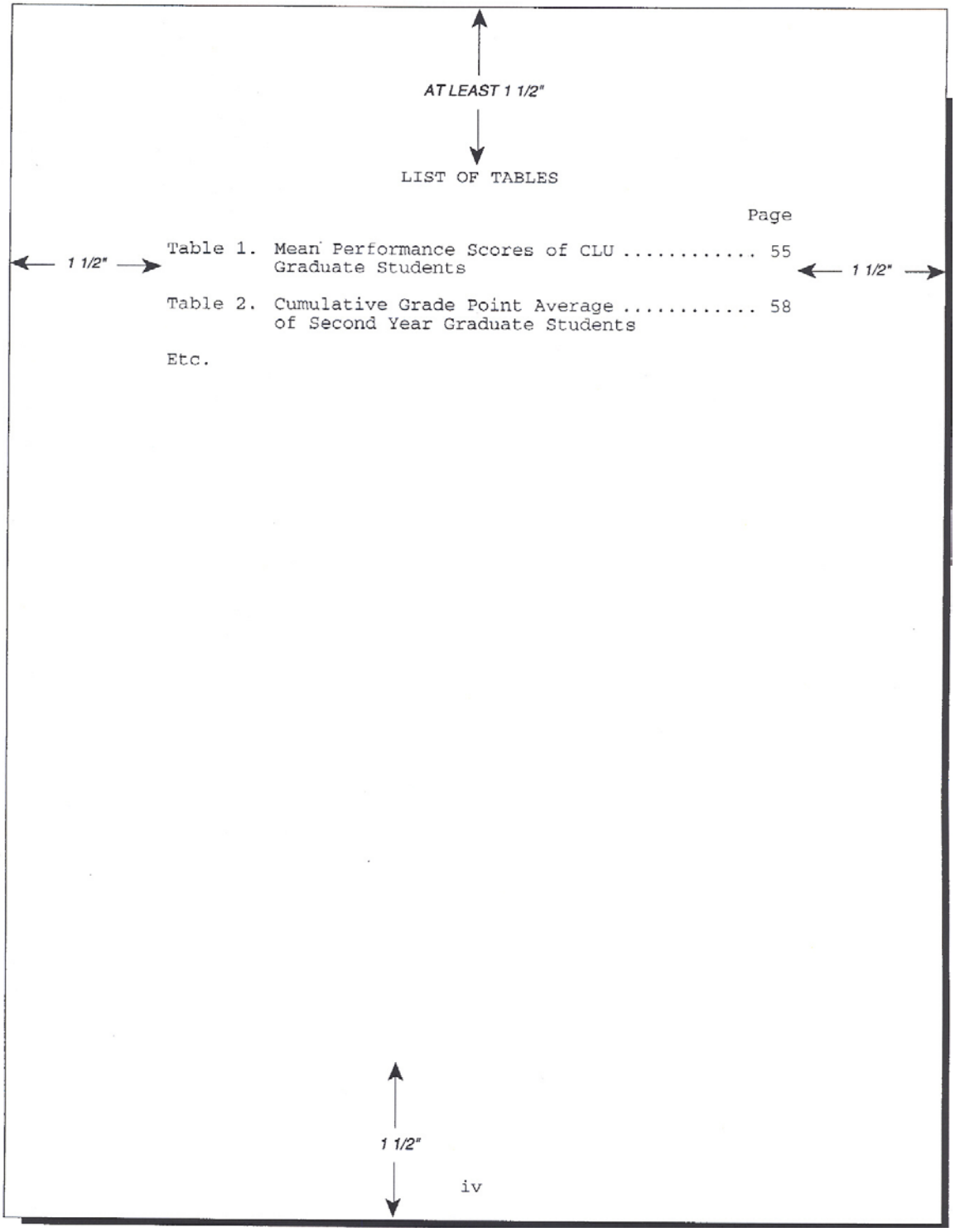
SAMPLE PAGES

TABLE OF CONTENTS

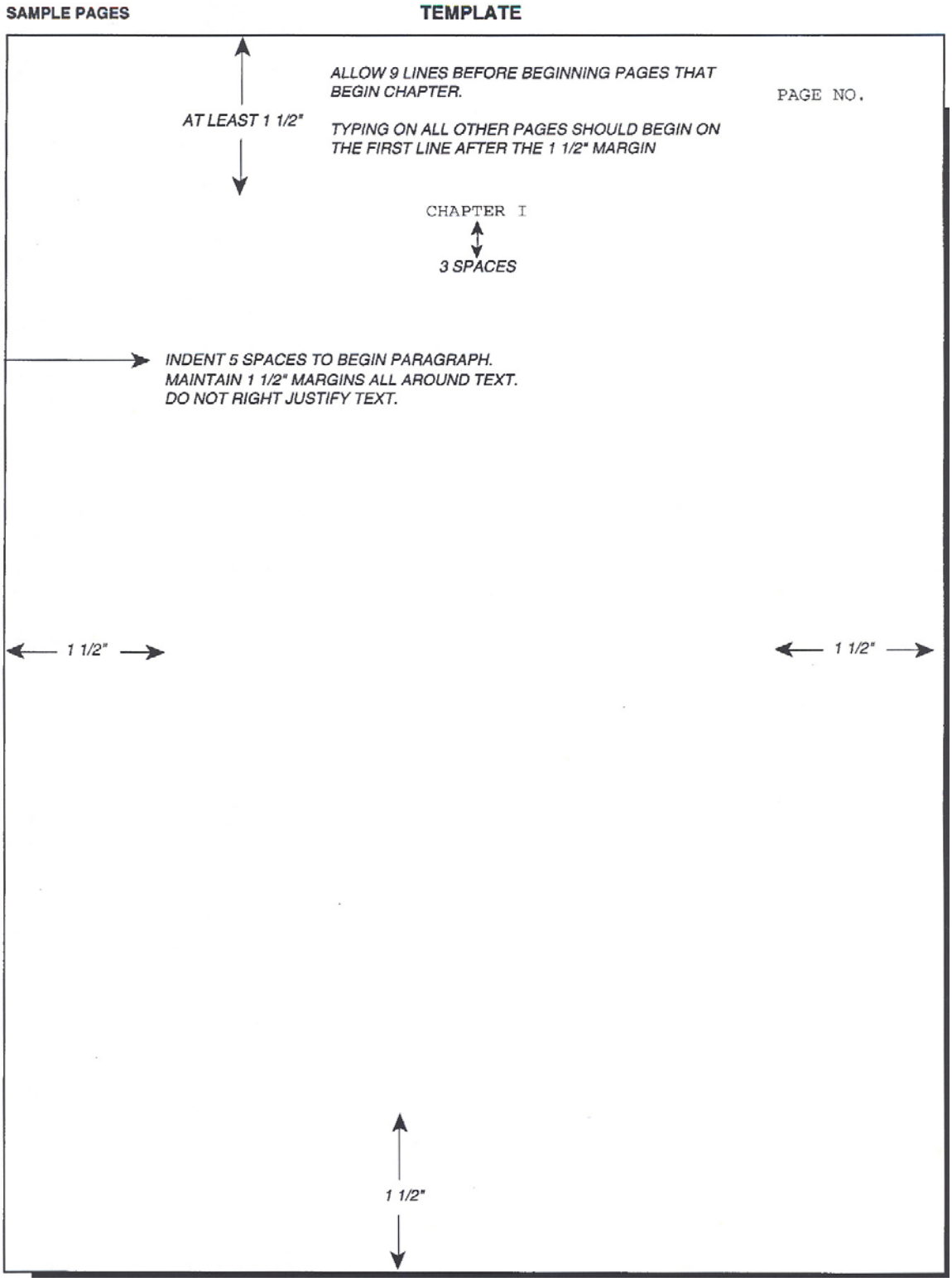


Appendix E: List of Figures and/or Tables

SAMPLE PAGES **LIST OF FIGURES OR ILLUSTRATIONS AND/OR LIST OF TABLES**



Appendix F: Template



Appendix G: Memorandum of Acceptance

SAMPLE PAGES

MEMORANDUM OF ACCEPTANCE

California Lutheran University

60 West Olsen Road
Thousand Oaks, California 91360-2787
805/492-2411

Date: _____

Student Name: _____

Address: _____

_____

Phone: Day _____ Evening _____

Degree Program: ❑ ED ❑ MFC ❑ MPA ❑ Psych

Degree Emphasis: _____

Proposed Topic/Title: _____

_____

_____

Brief Description of Study: _____

_____

_____

_____

Proposed Committee (Please print or type names)	I am willing to serve on committee. (Members signatures)	
_____ Chairperson	_____	_____ Date
_____	_____	_____
_____	_____	_____

Advisor's Approval of Committee and Topic _____ _____

Department Chair's Approval of Committee & Topic _____ _____

Dean's Approval of Committee and Topic _____ _____

Copies: Student
Chair Committee
Graduate Studies Office
Dept. Chairperson

Appendix H: Proposal Report Format

1. COVER PAGE:

Computer Science Masters Project

<project Title>
by

<Student Name >

<Student e-mail>

Approved By

Committee Chair :
<Signature> Date: <Date>

Committee Member1:
<Signature> Date: (Date>

Committee Member2:
<Signature> Date: (Date>

Dean:
<Signature> Date: (Date>

2. PROJECT SUMMARY:
3. INTRODUCTION
   The Introduction briefly explains the problem and creates interest for reading further. Describe the problem and justify why you select the problem. The problem statement evolves from the introduction and is usually a question that you plan to answer. Proceed to describe what sort of work has been already done and exactly what you propose to do, going into as much as detail as possible. Convince the

committee that the work will be worthwhile by indicating the technical merit or importance.

4. LITERATURE REVIEW
   A brief review of related literature. It describes that has already been done in the area and demonstrates your understanding of the problem and related issues. It should answer questions such as: Who is engaged in similar work? What has proven useless? What has been successful?
5. PLAN OF WORK
   - Task breakdown
   - Software/hardware specifications for development and for deployment
   - Design methods
   - Evaluation criteria and plan
   - Time schedule: Gantt chart
6. REFERENCES: