

SUMMARY REPORT

TEACHING OF UNDERGRADUATE

THERMODYNAMICS

A Mini-session presented at the

Annual Meeting

American Institute of Chemical Engineers

Philadelphia, Pa.

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Beaumont, Texas

INTRODUCTION

May 1972 to the chairman of

each chemical engineering department in the United States and Canada, together with a cover letter asking that the appropriate faculty member complete and return the questionnaire. A follow-up letter was sent on September 15 to those

See Appendix/tables listed

TABLE 1

CLASS LEVEL OF THERMODYNAMICS COURSES

SOPHOMORE	5
SOPHOMORE/SOPHOMORE	1
SOPHOMORE/SOPHOMORE/JUNIOR	2
SOPHOMORE/JUNIOR	11
SOPHOMORE/JUNIOR/SENIOR	2
JUNIOR	16
JUNIOR/JUNIOR	12
JUNIOR/JUNIOR/JUNIOR	2

TEXTS

The questionnaires from 57 schools mentioned textbooks seventy three times. The distribution is as follows:

Smith and Van Ness (1959)	27
Balzhiser, Samuels and Eliassen (1971)	13
Van Wylen and Sonntag (1965)	9
Hougen, Watson and Ragatz (1959)	5

Other texts were mentioned less than 5 times each. All texts mentioned are listed in the bibliography. Usually, different texts are used when a school offers two courses in thermodynamics. The "durability" of Smith and Van Ness is worth noting. Almost half of the schools responding use this fourteen-year old text. The text by Balzhiser, et al, only two years old, is currently used by about one-fourth of the schools responding.

Hougen, O.A., Watson, K.M. and Ragatz, R.A., "Chemical Process Principles," Volume II, 2nd ed. Wiley, New York, 1959.

Zemansky, M.W. and Van Ness, H.C., "Basic Engineering Thermodynamics." McGraw-Hill, New York, 1966.

Balzhiser, R.E., Samuels, M.R. and Eliassen, J.D., "Chemical Engineering Thermodynamics." Prentice-Hall, Englewood Cliffs, N.J. 1972

Smith, J.M. and Van Ness, H.C., "Introduction to Chemical Engineering Thermodynamics," 2nd ed, McGraw-Hill, New York, 1959.

Denbigh, K., "The Principles of Chemical Equilibrium," 3rd ed., Cambridge University Press, Cambridge, 1971.

Van Wylen, G.J. and Sonntag, R.E., "Fundamentals of Classical Thermodynamics," Wiley, New York, 1965.

REPLIES TO QUESTIONNAIRES

The replies from each school are summarized on the following pages.

The following form is used.

NAME OF UNIVERSITY

Authors of Text used in courses. (When one or more numbers appear before the name of the text, this indicates the course for which the text is used.

1, 2 Balzhiser means the text is used for both the first and second courses.)

Level of Course(s) (listed to the right of the text)

The following words refer to replies to specific sections of the questionnaire.

... have found particularly

effective are

FEATURES ("Distinctive features of the course are:")

CHALLENGES ("Some particular challenges in teaching thermodynamics are:")

TEXT Any comments on the tests being used.

Instructions for Completing the Questionnaire

We invite you to share with others those presentations, analogies,

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UNLGRADUATE THERMODYNAMICS

Instructor: _____

University: _____

Such groups as I give it are:

Some explanations of concepts which I have found particularly effective are...
_____ as many people as possible

QUESTIONNAIRE ON THE TEACHING OF UNDERGRADJATE THERMODYNAMICS

I. IDENTIFICATION

Instructor _____

University _____

II. COURSE TITLE(S)

1. _____

2. _____

3. _____

III. TIME AVAILABLE

	Course 1	Course 2	Course 3
Hrs lecture / week	_____	_____	_____
Hrs tutorial / week	_____	_____	_____
Hrs lab / week	_____	_____	_____

IV. TEXT(S) AND RESOURCES (AUTHOR, TITLE)

Course 1: _____

Course 2: _____

Course 3: _____

V. STUDENTS

Course 1 Course 2 Course 3

A. Year of Students e.g. soph	_____	_____	_____
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B. Class Size	_____	_____	_____
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VII. Does your university operate on quarters or semesters?

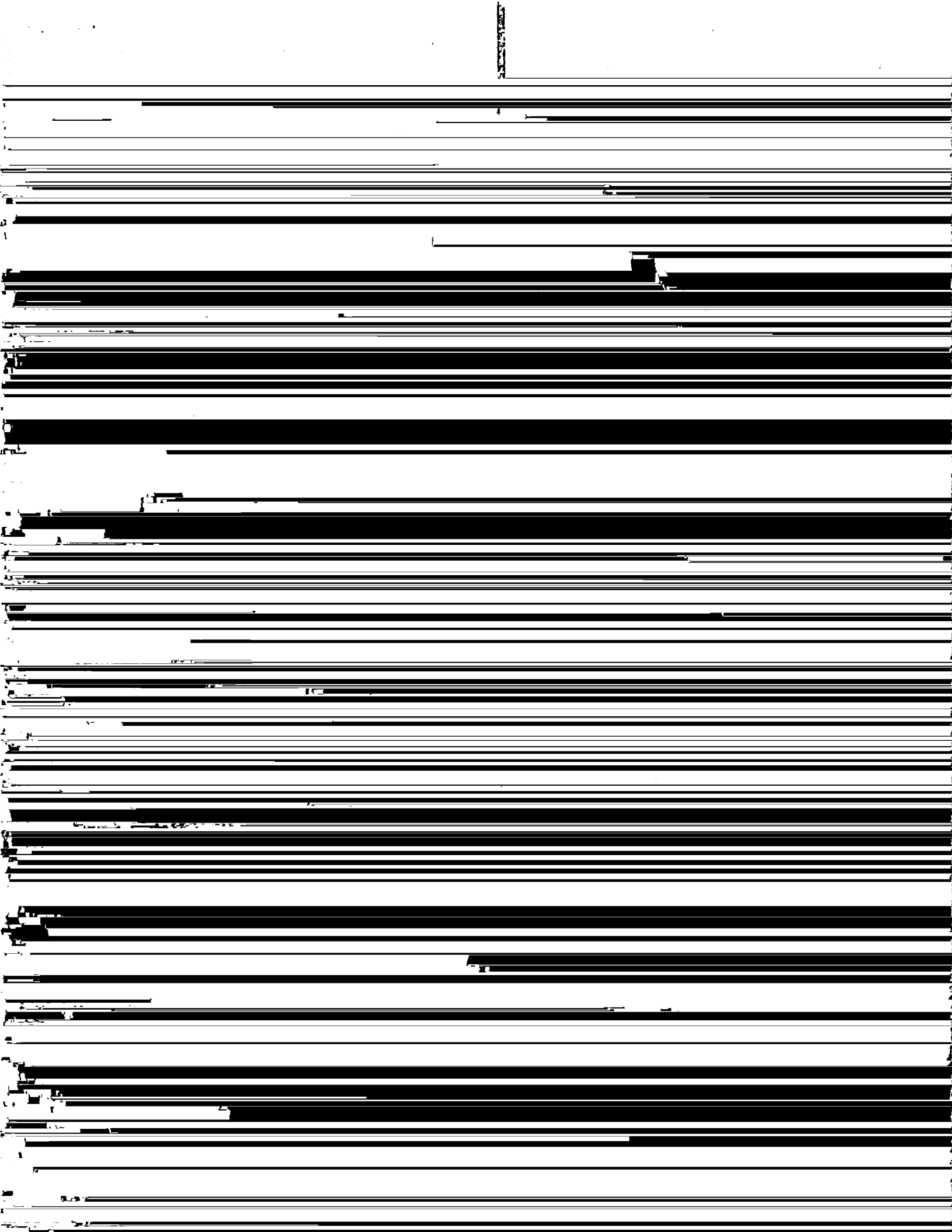
Quarters of _____ weeks

Semesters of _____ weeks

_____ of the survey report. Yes No

_____ your course outline.

XI. Do you feel there is a need for a better textbook for Chemical Engineering Thermodynamics? In what topic areas can the text you now use be improved?



UNIVERSITY OF CALIFORNIA (BERKELEY)

EXPLANATION

Transmissibility in gas expansion and



CLEVELAND STATE UNIVERSITY

DARTMOUTH COLLEGE





REPTILES

UNIVERSITY OF MISSOURI (COLUMBIA)

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NEWARK COLLEGE OF ENGINEERING

1,2 Smith & Van Ness
CHALLENGES

Jr/Jr

Too many concepts to be understood and remembered by the students. Even with two semesters, understanding is limited.

TEXT

Could be updated.

NORTH DAKOTA UNIVERSITY

1. Balzhiser et al.

TEXT

Best present book for CHE's, although it could be improved.

Sr

OHIO STATE UNIVERSITY

1,2 Smith & Van Ness

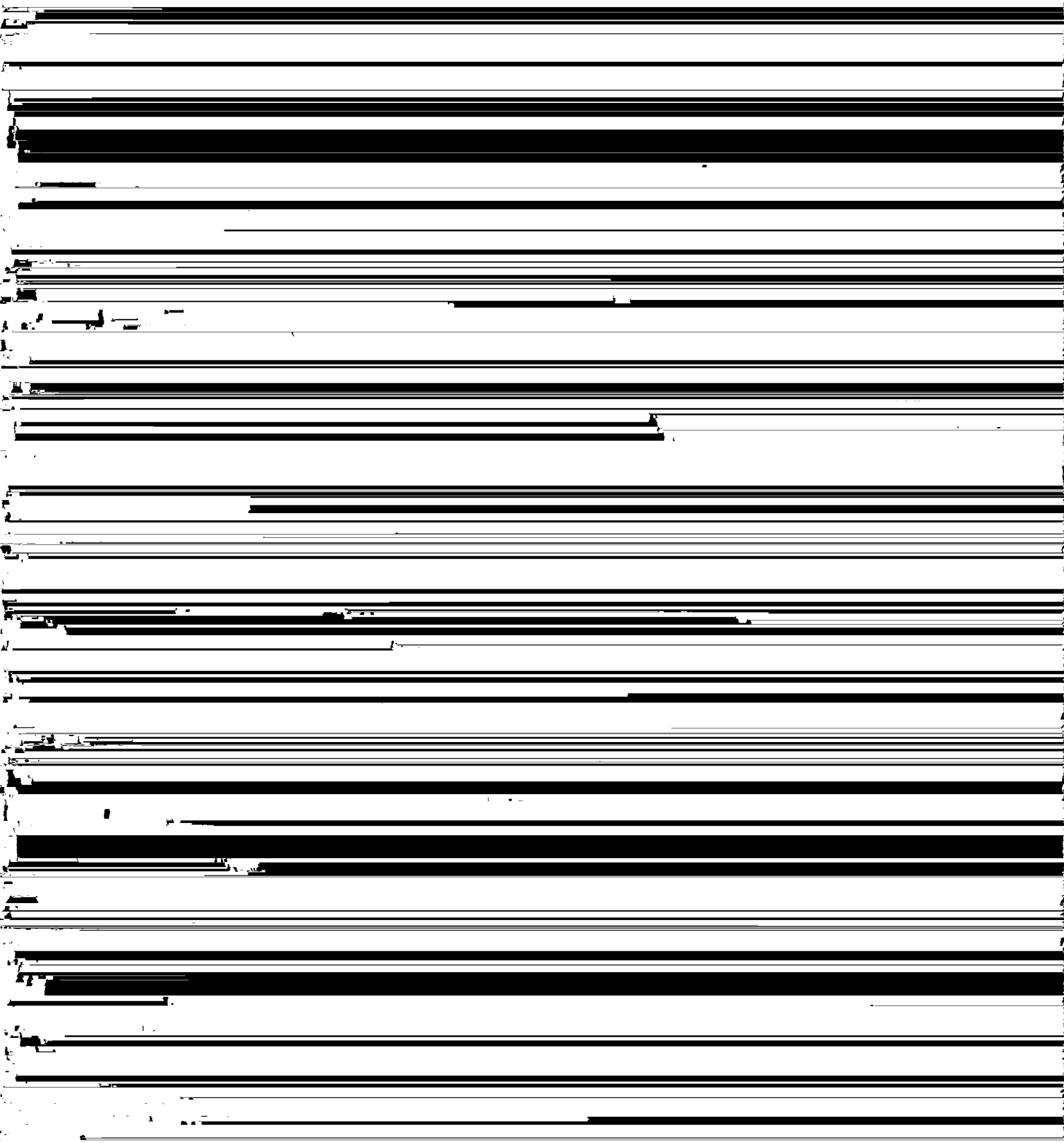
Jr/Jr

OREGON STATE UNIVERSITY

PENNSYLVANIA STATE UNIVERSITY

1.2 H... ..

1. Himmelblau: 2. Smith JOPH/JR/SR



CONFIDENTIAL

VILLANOVA UNIVERSITY

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