



# OPPORTUNITY UNLIMITED



*A special message  
to those seeking a  
new, profitable career  
... with prestige and  
security for the  
future...*



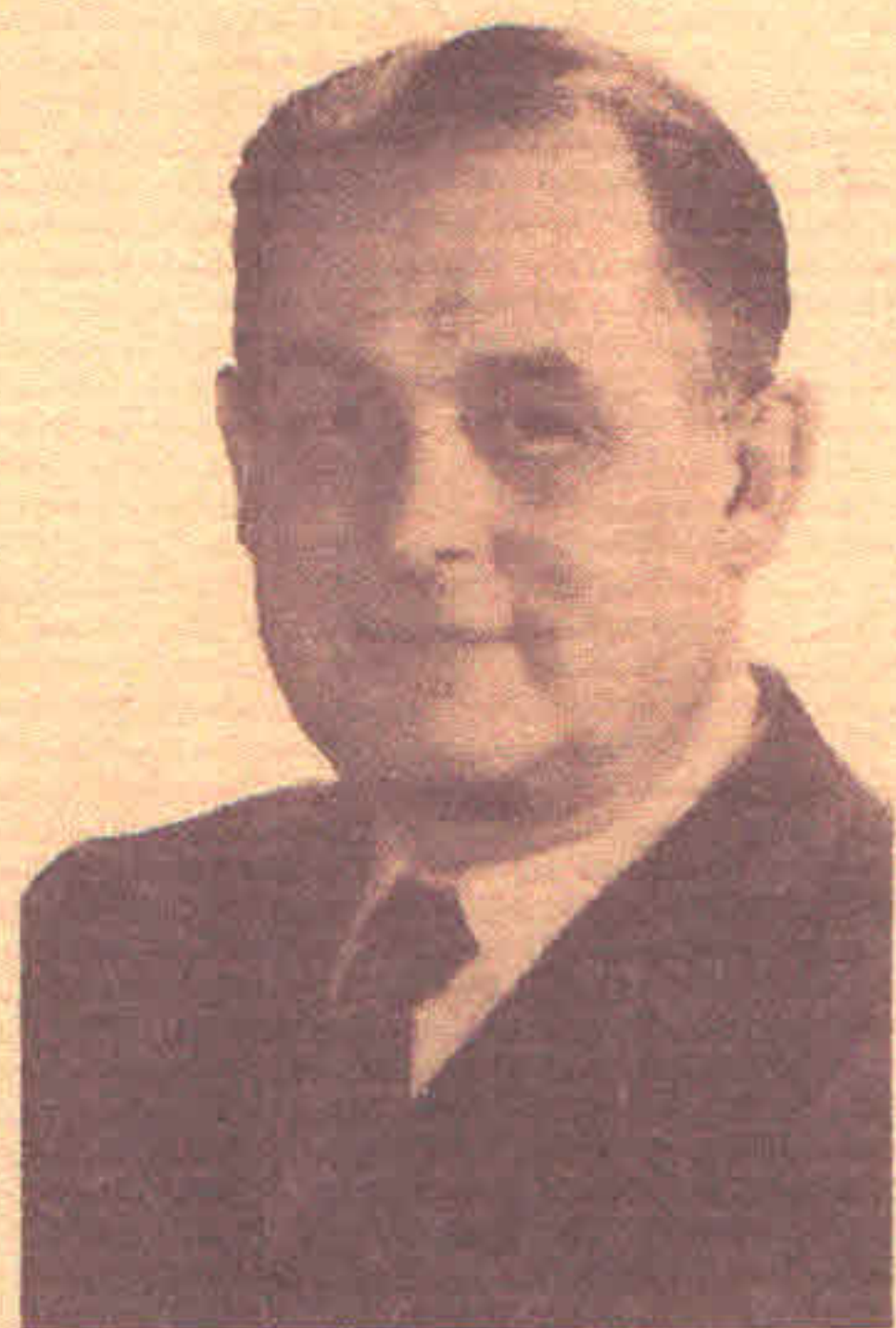
# PLUMBING ENGINEERING

*New horizons...new opportunity...  
a challenging, profitable career  
can be yours...READ THESE MESSAGES  
FROM LEADERS OF INDUSTRY...*

WILLIAM H. NOTTHOFF  
Past President, Associated Plumbing  
Contractors of California

"A pressing need exists for additional men with more thorough training in the field of Plumbing Engineering.

"It would be difficult to express my enthusiasm toward the splendid opportunities which this program presents to our future plumbing engineers. Any young man who desires to qualify himself for such an important business, should avail himself of the many advantages which this curriculum offers."



*W H Notthoff*

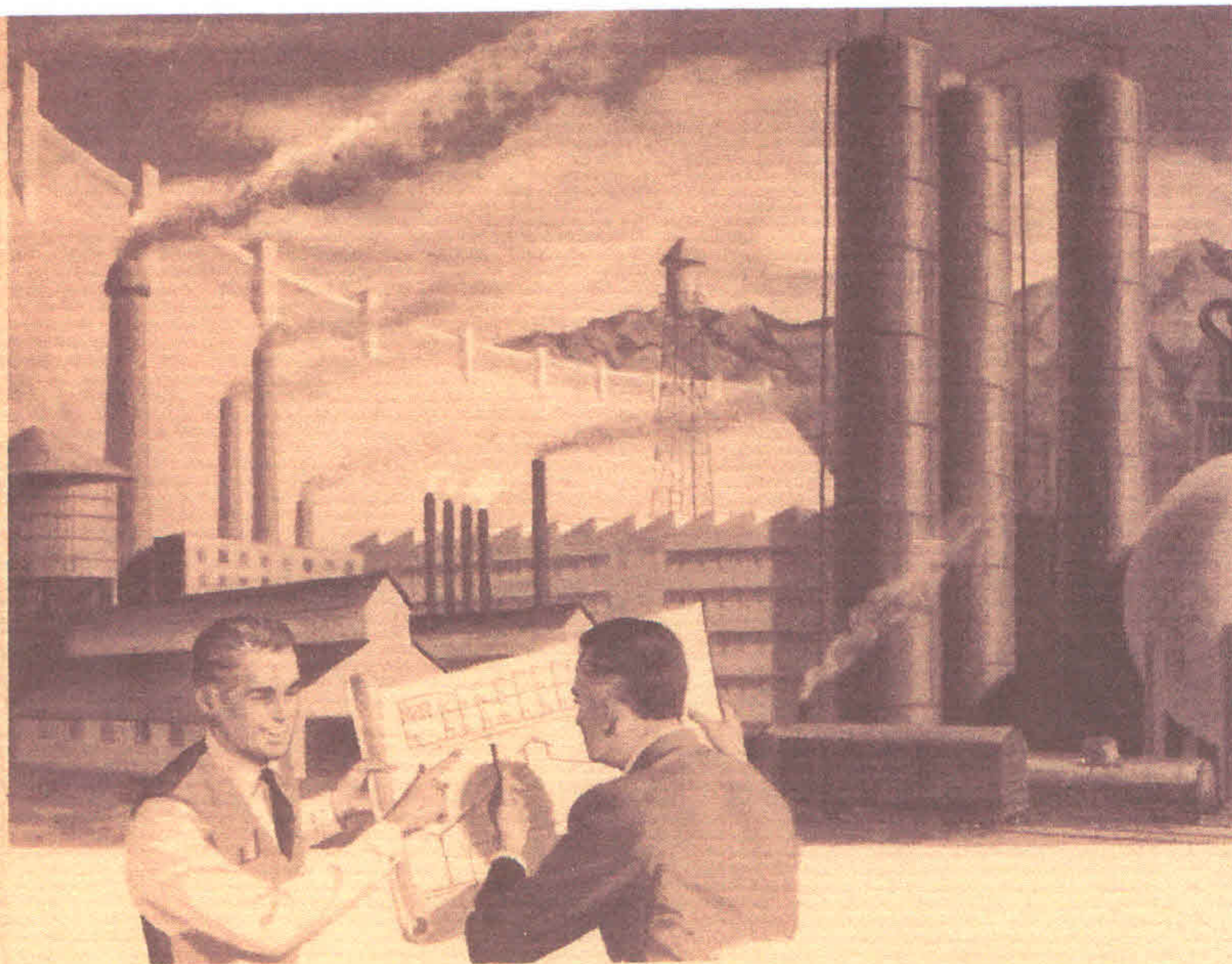
WILLIAM H. BALDWIN  
President, Western Plumbing  
Officials Association



"Our Association is proud of the advancement of the plumbing industry and our part in that advancement. I can assure the prospective student that the course, Plumbing Engineering, presents

'the opportunity of a lifetime' for a prosperous, successful career."

*W H Baldwin*



## What is my future as a PLUMBING ENGINEER?

A successful, profitable future can be yours... with employment unlimited! Consulting engineers, designers, estimators on Federal, State and municipal government projects; positions with utilities, architects, manufacturers of plumbing fixtures and appliances; installers and designers of firesprinkler systems and sanitation projects... these opportunities, and others, are open to you as a plumbing engineer.

## Can I work while going to school?

Yes, there are many opportunities for working while learning. More than 4000 Master Plumbers in Los Angeles County are your potential employers... You can work as stock clerk, shopman, apprentice, helper... right on the job... and at good pay. And, too, academic credit is given for this profitable on-the-job training during the school year.

## How do I get a job upon graduating?

You will receive every possible assistance from the offices of the Associated Plumbing Contractors, Western Plumbing Officials Association, the Plumbers Union, your college placement bureau, and local utilities and allied industries.



GILBERT E. MORRIS

Superintendent and Manager,  
Los Angeles Department of  
Building and Safety



"There are excellent opportunities for students who choose the course in Plumbing Engineering. Now, as never before, there is a great need for men with engineering training to plan and supervise the installation of the highly complicated mechanical installations in our modern buildings."

*Gilbert E. Morris*



DR. GEORGE M. UHL, M.D.  
Los Angeles City Health Officer

"I recommend plumbing engineering as a profession for young men who want a good future in which they can make a positive contribution towards the advancement of our society. As advisors to builders, architects and plumbers, these professional workers will hold key spots in construction planning and health protection."

*George M. Uhl*

REMEMBER—a successful, profitable future can be yours as a graduate Plumbing Engineer; a lucrative field with a secure future. Here, in a highly respected profession, are "Opportunities Unlimited." But you must act now.

Write or call for further information  
Faculty Coordinator of Plumbing Engineering or  
Office of Dean of Instruction,  
Los Angeles City and State College,  
855 N. Vermont Avenue, Los Angeles 29, California.  
Telephone NOrmandy 3-3201.

## Who may enroll?

You—if you are a high school graduate, a graduate plumbing apprentice, or if you can pass the necessary aptitude tests.

## What courses do I study?

A well-rounded curriculum includes such courses as psychology, hydraulics, engineering, literature, technical report writing, fluids, sanitation bacteriology, properties of engineering, heating, ventilating, air conditioning and refrigeration, salesmanship, English, economics, physics, drawing, statics and surveying. An Associate in Arts degree may be earned in two years; an additional two years fulfills requirements for the Bachelor of Science Degree.

## Where may I obtain further information?

Call or write, Faculty Coordinator of Plumbing Engineering, or Office of Dean of Instruction, Los Angeles City and State College, 855 N. Vermont Avenue, Los Angeles 29, California, Telephone NOrmandy 3-3201.

*Courses are presented by experienced instructors trained in this specialized field.*





Los Angeles  
City and State Colleges

*announce*

A NEW CURRICULUM

**PLUMBING  
ENGINEERING**

**1952 - 1953**

855 NORTH VERMONT AVENUE  
LOS ANGELES 29, CALIFORNIA



# PLUMBING ENGINEERING

This new curriculum has been developed upon the request of the Associated Plumbing Contractors of Los Angeles with the cooperation and support of the Western Plumbing Officials Association, the Los Angeles City Health Department, the City Department of Building and Safety, organized labor, the Southern California Gas Company and the Los Angeles Department of Water and Power.

The curriculum is designed to train students for Plumbing Engineering and its related fields of heating, piping, ventilation, refrigeration, hydraulics and sanitation. The courses are so arranged that in two years the degree of Associate in Arts may be earned; and for the student having the ability, the time and aptitude, an additional two years, four in all, fulfills the requirements for the Bachelor of Science degree. In order that the graduates of this curriculum may be well-rounded citizens as well as technically trained engineers, courses in economics, history, ethics and the like have been included in the recommended study list.

It is expected that each student will complete satisfactory work experience with a cooperating plumbing contractor during three summers or other equivalent time. For this experience academic credit will be allowed.

## ADVISORY COMMITTEE

Frank R. Brown, Sr. . . . .	Chairman, Education Advisory Board of Los Angeles City and State Colleges — Parkway 8535
C. L. Freeman . . . . .	Associated Plumbing Contractors of Los Angeles
G. E. Morris . . . . .	Superintendent and Manager, Los Angeles Department of Building and Safety
George M. Uhl, M.D. . . . .	Los Angeles City Health Officer
Hubert Reeves . . . . .	Co-Publisher, Western Plumbing and Heating Journal
Arthur R. Lott . . . . .	Chief of Plumbing Division, Los Angeles Department of Building and Safety
Robert A. Wood, M.E. . . . .	Chief Plumbing Inspector, County of Los Angeles
E. J. Brown . . . . .	Plumbers' Local No. 78
R. A. Samuelson . . . . .	Los Angeles Department of Water and Power
Jack F. Parker . . . . .	Chairman, Western Plumbing Officials Association, Educational Program
Charles L. Senn . . . . .	Engineer-Director, Bureau of Sanitation, Los Angeles City Health Department
Frank R. Brown, Jr. . . . .	Chairman, Education Committee Associated Plumbing Contractors of Los Angeles — Parkway 8535
P. R. Shea . . . . .	Supervisor, Residential Sales, Central Division, Southern California Gas Company
W. Q. Kringle . . . . .	Supervisor, Dealers Sales and Promotion, Southern California Gas Company
John F. Sullivan . . . . .	Business Manager, Associated Plumbing Contractors of Los Angeles

## FIRST YEAR

	Units
Surveying . . . . .	4
Engineering Mathematics . . . . .	6
Engineering Drawing . . . . .	5
Engineering Orientation . . . . .	1
English . . . . .	3
Physics . . . . .	8
Personal Hygiene . . . . .	2
Physical Education . . . . .	1
Plumbing Problems . . . . .	3
Total	33

## SECOND YEAR

Elementary Hydraulics . . . . .	2
Engineering Mathematics . . . . .	6
Chemistry . . . . .	5
U. S. History . . . . .	6
Speech . . . . .	3
Plumbing Problems . . . . .	3
Principles of Economics . . . . .	3
Statics . . . . .	3
Drawing . . . . .	2
Physical Education . . . . .	1
Total	34

## JUNIOR YEAR

	Units
Dynamics . . . . .	3
Mechanics of Materials . . . . .	3
Engineering Literature and Technical Report Writing . . . . .	2
Thermodynamics . . . . .	6
Law for Plumbers . . . . .	3
Fluid Mechanics Laboratory . . . . .	2
Intermediate Mechanics of Fluids . . . . .	3
Properties of Engineering Materials . . . . .	2
Psychology . . . . .	3
Electives . . . . .	2
Total	29

## SENIOR YEAR

Plumbing Construction Estimating . . . . .	2
Stress in Structures . . . . .	3
Fire Sprinkling Systems . . . . .	2
Heating, Ventilating, Air Conditioning and Refrigeration . . . . .	3
Labor Economics . . . . .	3
Water Supply and Sewage Disposal . . . . .	3
Advanced Hydraulics . . . . .	3
Sanitation Bacteriology . . . . .	2
Electives . . . . .	9
Total	30

Other upper division courses include: Business Courses, Social Sciences, Elements of Electrical Engineering, Sewerage, Structural Problems in Sanitation Engineering, Public Health Administration, Soil Mechanics, Municipal Sanitation, Fundamentals of Science for Plumbers.



# COURSES OF INSTRUCTION

## ENGINEERING MATHEMATICS

This series of General Engineering calculations extends throughout the first two years of training and may represent less than the 14 college units listed if the student's background is sufficient to permit a reduction.

The courses train the student to handle calculations requiring the application of logarithms, geometry, trigonometry, graphics, calculus, etc., to engineering problems. The form and method of presenting these calculations will be emphasized.

## CHEMISTRY

This course is designed primarily for students desiring an applied course in chemistry covering such fundamentals as inorganic, organic chemistry, and biochemistry.

## ENGLISH

The course is arranged to give practice in two fundamental skills: (1) Reading; (2) Writing.

## SPEECH

The Speech course offers training in the practical speech of everyday life.

## DRAWING

A sequence of courses extending throughout parts of the first two years of training. Such fundamentals as lettering, care of equipment, orthographic projection, working drawings, assembly drawings from sketches, elementary design of machine parts, piping layouts, free-hand sketching, etc., are presented.

## SURVEYING

Surveying covers the underlying principles of plane surveying, surveying instruments and their use, adjustment of the level and transit, calculations and computations, and field practice.

## ENGINEERING ORIENTATION

This course describes and relates the activities and problems of the various engineering fields. It familiarizes the student with engineering language.

## PRINCIPLES OF ECONOMICS

Principles of Economics is designed to give the student an understanding of economic forces. Among the topics studied are production, exchange, money, banking, credit, prices, corporations, and other business organizations.

## PERSONAL HYGIENE

This course deals with the problems of personal and community hygiene and is designed to develop in the individual an appreciation of good mental and physical health.

## PHYSICAL EDUCATION

Physical Education is an activity course which must be taken each semester of the first two years of training.

## HISTORY

This subject is studied in both semesters of the second year. These courses provide a background in the political and social development of the United States up to and including present day problems. Constitutional development of the United States is stressed.

## PHYSICS

Physics is studied in the second year and provides a general course covering the topics of mechanics, heat, electricity, magnetism, light and sound.

## STATICS

In this course the student makes an analysis of force systems, resultants, equilibrium, friction, first and second moments.

## PLUMBING PROBLEMS

This course combines classroom and field instruction with laboratory work to provide a practical and theoretical knowledge of the principles involved in proper planning and installation of soil and waste pipes, traps and vents, hot and cold water systems, fire sprinkler systems and cross-connection control and elimination equipment. The student studies the operational principles of septic tanks, grease traps and private sewage disposal systems, circulation and filtration systems for swimming pools and various water-treating chemical feeding devices. These studies are correlated with modern plumbing and sanitation codes to show the reasons for various legal requirements.

## ENGINEERING LITERATURE AND TECHNICAL REPORT WRITING

These courses offer practice in descriptive and expository writing, particularly in writing on technical subjects, assigned readings, oral compositions.

## DYNAMICS

The principles of kinematics, and kinetics are applied to engineering structures and machines in this course.

## FLUID MECHANICS

Fluid Mechanics courses begin in the Junior year with the study of elementary hydraulics wherein the fundamentals of hydrostatics and hydrodynamics and their application to flow through orifices, pipes, channels, and weirs will be considered. In the course, "Intermediate Mechanics of Fluids," the study of fluids will be continued, the emphasis falling upon topics about forces, energy and momentum of fluids. A laboratory class is included. Finally, flow problems in complex pipe systems, surge tanks, and in unsteady motion and water hammer will be presented.

## MECHANICS AND PROPERTIES OF MATERIALS

In these two courses the elementary theory of the elastic stresses and deformations of riveted and welded joints, beams and columns will be considered. An introduction to the topics of fatigue and energy loads, physical properties and tests of engineering materials, and the manufacture and fabrication of materials.

## HEAT ENGINEERING

Heat Engineering courses extending into the Senior year cover such fundamentals as the first and second law of thermodynamics; properties and flow of vapors, and perfect gases. The fundamentals will be applied to such machines as engines, and compressors. Finally the study of heating, ventilating, refrigeration and air conditioning will be considered.



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