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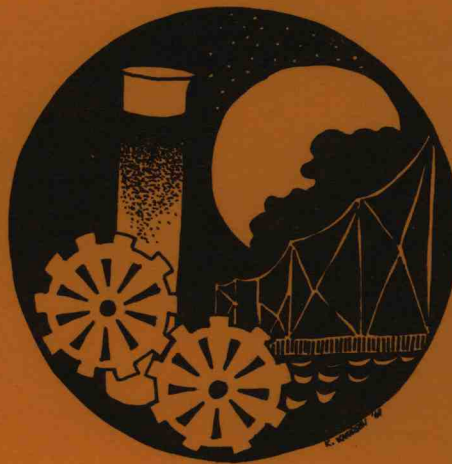
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**Graduate Education
and
Research
in the
School of Engineering**

DISCARD by
J. G. KNUDSEN



**CIRCULAR NO. 39
JANUARY 1970**

**ENGINEERING EXPERIMENT STATION
OREGON STATE UNIVERSITY
CORVALLIS, OREGON 97331**

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FORWARD

This report briefly summarizes the graduate education and research activity in the School of Engineering at Oregon State University. The undergraduate and graduate programs of the School provide a basis for sound modern training of personnel for the technical community.

Programs leading to B.S., M.S., and Ph.D. are offered in the following majors:

- Agricultural Engineering (Cooperative with School of Agriculture)
- Chemical Engineering
- Civil Engineering
- Electrical and Electronic Engineering
- Industrial Engineering
- Mechanical Engineering
- Metallurgical Engineering
- Nuclear Engineering
- Ocean Engineering (Master of Ocean Engineering also offered,
no B.S. offered)

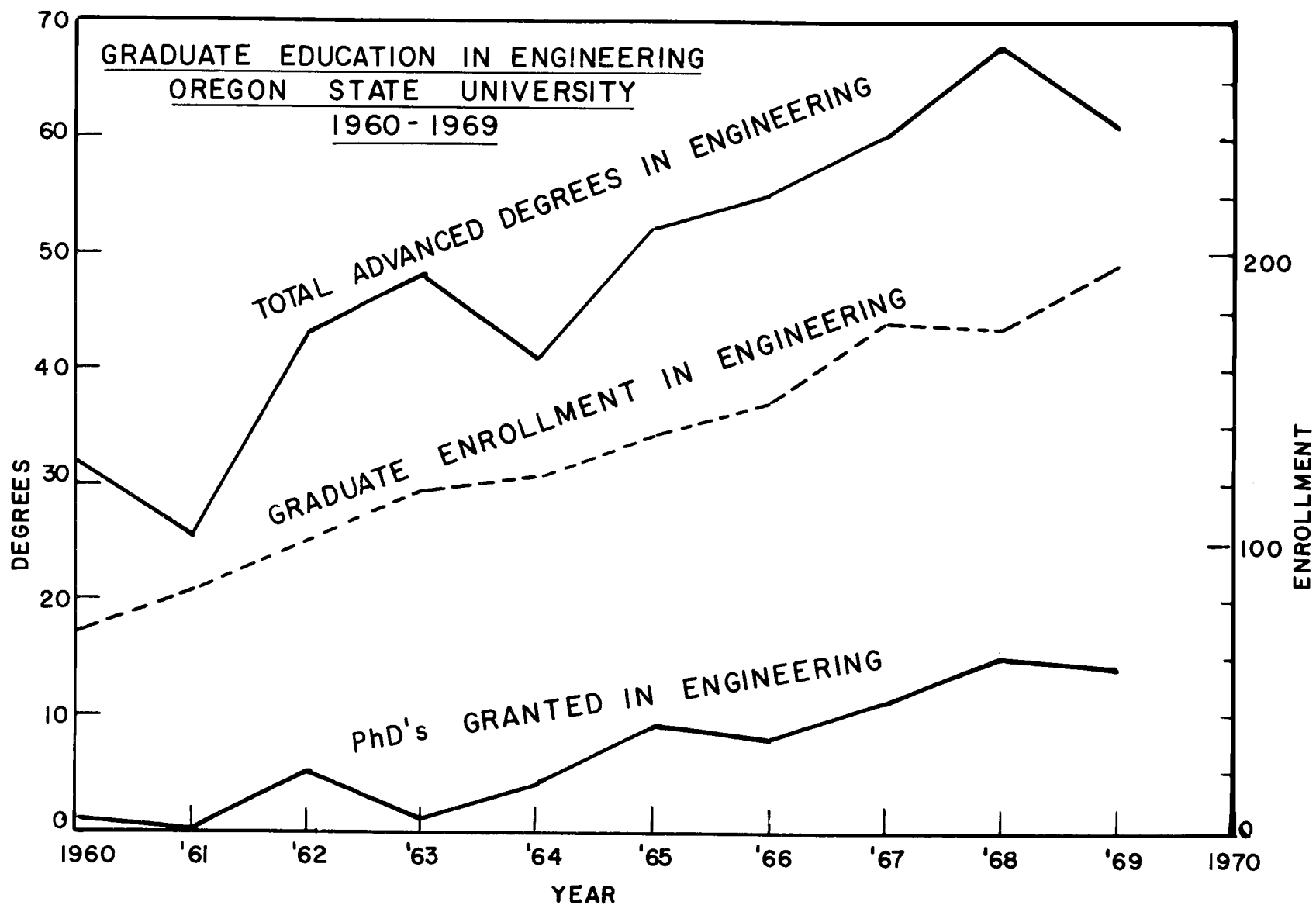
The research activity in the School is fully integrated into the graduate program. All research projects are initiated by faculty and are conducted in the laboratories of the several departments of the School. Research supported by outside sponsors must be (a) of such a nature that it utilizes the special facilities of the School and the special professional competence of one or more members of the engineering faculty; (b) closely allied to the on-going research program of the School and the faculty conducting the work; (c) of a nature so that it may serve the educational objectives of the School through participation of graduate students studying in fields closely related to work; and (d) it may qualify for M. S. or Ph.D. theses. All Faculty carrying on research activities also participate fully in both undergraduate and graduate instructional activities in the School.

Graduate programs in the School of Engineering are flexible so that the individual needs and desires of each student may be accommodated. There is ample opportunity for interdisciplinary work among the various engineering departments as well as with other Schools on the campus.

Present research activity in the School amounts to slightly more than \$900,000 per year. One-third of this amount goes toward the support of graduate students through research assistantships, traineeships, and fellowships. The remainder provides summer support for Faculty and experimental equipment. Equipment purchased by research funds greatly enhances both the undergraduate and graduate instructional programs.

TEN YEAR STATISTICS - ENROLLMENT AND DEGREES

Year	Enrollment		Degrees Awarded		
	Undergraduate	Graduate	B. S.	M. S.	Ph. D.
1968-69	1800	166	347	47	14
1967-68	1717	172	266	43	15
1966-67	1566	149	248	39	11
1965-66	1493	137	222	41	8
1964-65	1388	122	269	42	9
1963-64	1408	117	223	37	4
1962-63	1418	101	209	47	1
1961-62	1278	83	252	38	5
1960-61	1275	83	257	26	--
1959-60	1334	59	311	29	1



FACULTY, ENROLLMENT, AND GRADUATE DEGREES GRANTED

Degree Program	Faculty ¹	<u>Enrollment, Fall 1968</u>		<u>Degrees Granted, 1967-68</u>	
		M. S.	Ph. D.	M. S.	Ph. D.
Agricultural Engrg.	11	0	0	0	0
Chemical Engrg.	6	4	17	6	1
Civil Engrg.	22	33	13	14	3
Electrical Engrg.	18	36	13	17	5
Mechanical Engrg.	21	20	15	12	4
Industrial Engrg.	3	9	1	3	2
Nuclear Engrg.	3	7	6	0	0
Total	84	109	65	52	15

Only three professorial ranks.

Degree Program	Faculty	<u>Enrollment, Fall 1969</u>		<u>Degrees Granted, 1968-69</u>	
		M. S.	Ph. D.	M. S.	Ph. D.
Agricultural Engrg.	11	1	0	0	0
Chemical Engrg.	6	8	13	3	2
Civil Engrg.	22	36	15	16	1
Electrical Engrg.	18	43	13	15	9
Mechanical Engrg.	16	20	17	7	1
Industrial Engrg.	4	6	3	4	0
Nuclear Engrg.	5	7	5	2	0
Metallurgical Engrg.	5	4	5	0	1
Total	87	125	71	47	14

Only three professorial ranks.

APPOINTMENT AVAILABLE TO GRADUATE STUDENTS

Title of Appointee	Appointments Available 1968-69	Appointments Available 1967-68
Research Assistant ¹	20	10
Research Assistant ²	6	8
FWPCA Trainee	5	7
NSF Trainee	11	9
NASA Fellow	1	6
NDEA Fellow	4	5
NIH Trainee	2	10
Ind. Fellow	5	9
Teaching Assistant	36	36
OCD Trainee	--	2
USBM Fellow	1	

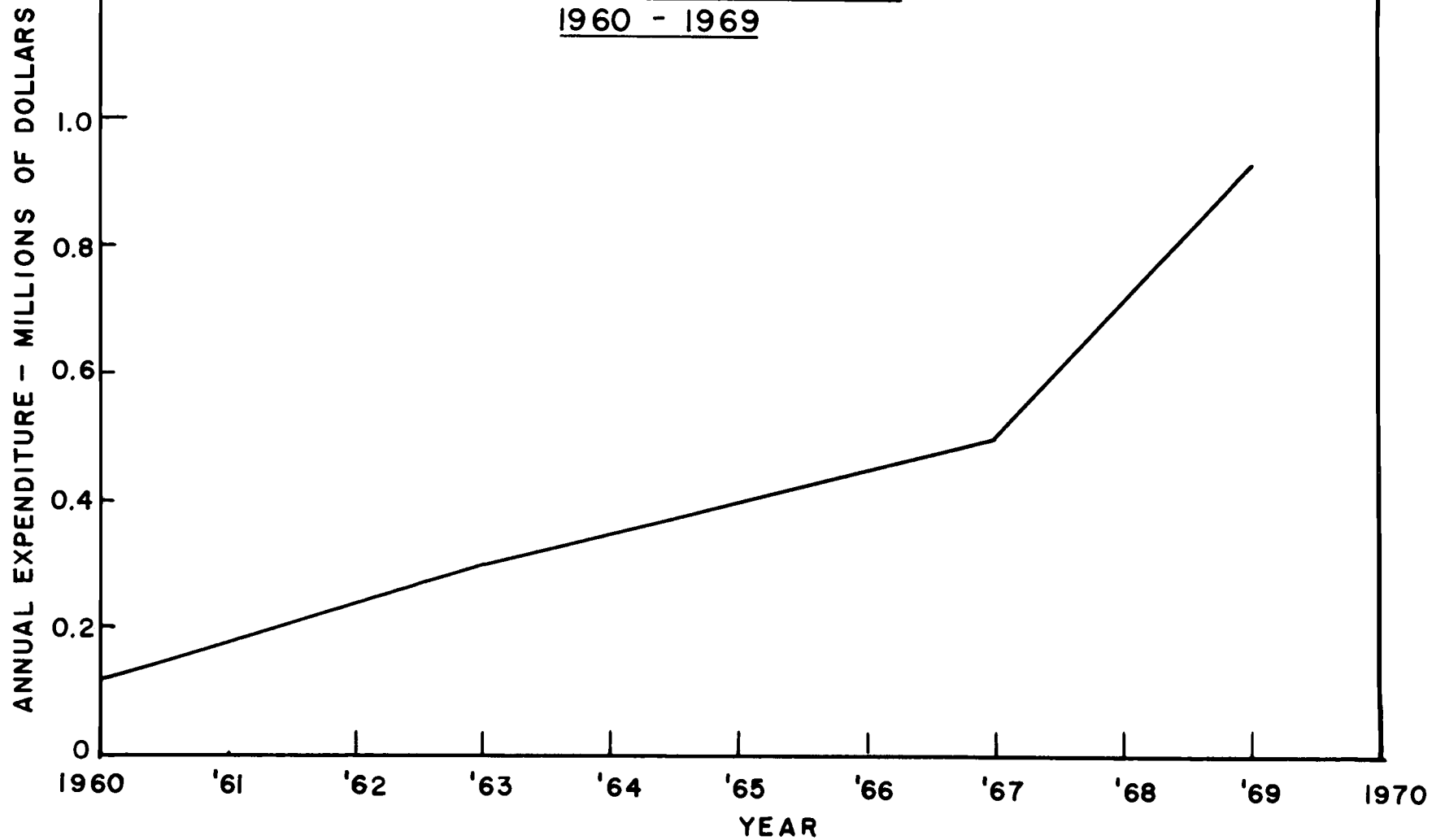
¹ Appointments on sponsored research projects.

² State-supported research assistantships.

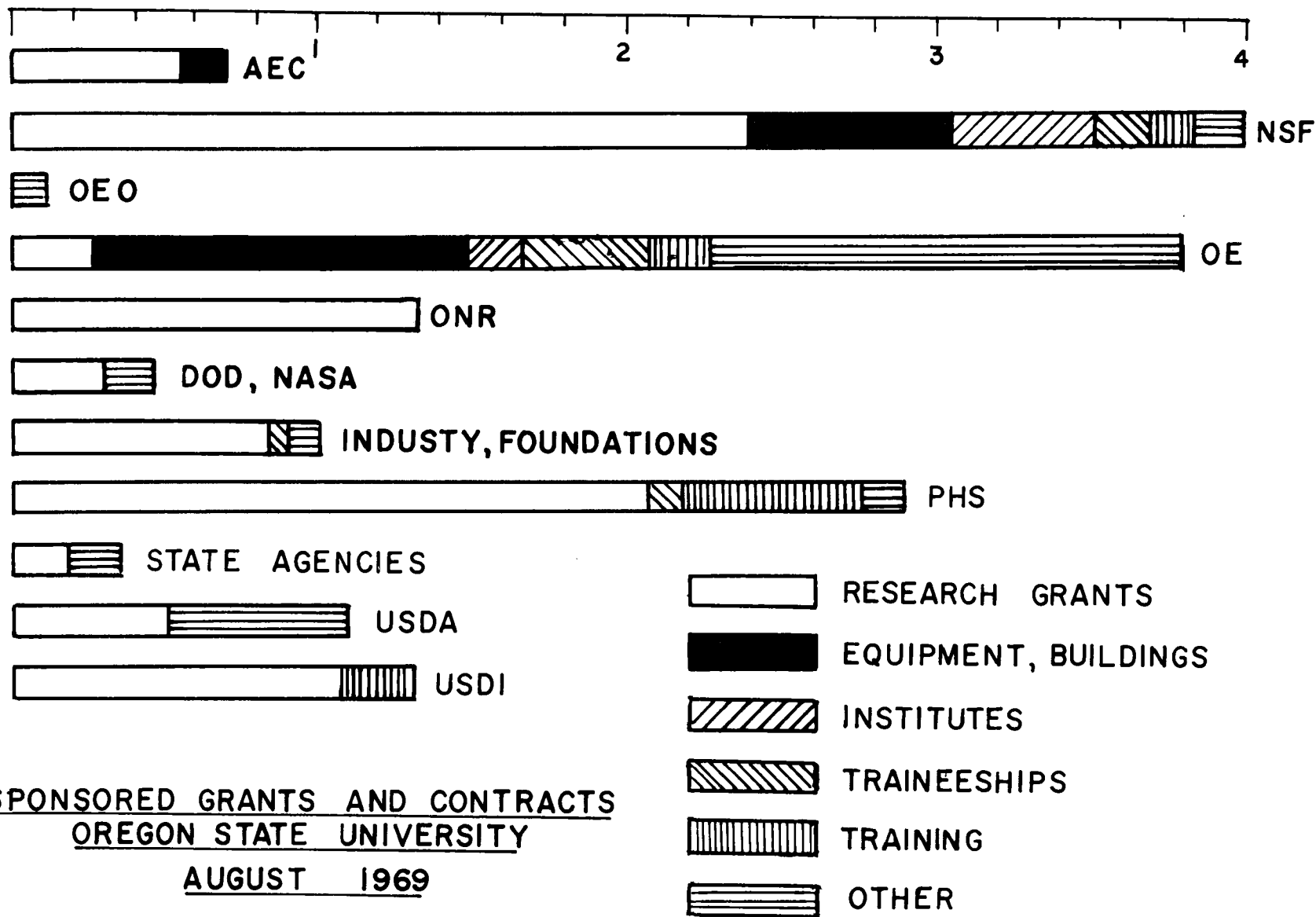
SOURCE OF RESEARCH INCOME

	<u>1967-68</u>	<u>1968-69</u>
Federal Government	\$550,000	\$762,000
State and Local Government	50,000	76,000
Private, Nonprofit organization	20,000	20,000
Business and Industry	40,000	20,000
Other	<u>50,000</u>	<u>50,000</u>
Total	\$710,000	\$933,000

RESEARCH ACTIVITY IN THE SCHOOL OF ENGINEERING
OREGON STATE UNIVERSITY
1960 - 1969



ANNUAL EXPENDITURE - MILLIONS OF DOLLARS



CURRENT RESEARCH AREAS

Agricultural Engineering

Mechanical Stemming of Strawberries
Housing the Aged
Irrigation and Drainage
Sprinkler Irrigation
Computer Analysis of Drainage
Small Fruit Harvesting and Handling
Douglas Fir Bark as a Filter Media for the Disposal of Animal Wastes
Labor Efficiency Studies in the Lily Bulb Industry
Pesticide Application Equipment
Field Burning Abatement Investigation
Air-Supported Plastic Greenhouses
Farm Structures and Environment

Chemical Engineering

Minimizing Axial Dispersion of Fluid in Process Equipment
Design of Continuous Chromatographic Columns
How to Treat Reactive Distillation
Control of Residence Time Distribution of Flowing Solids in Gas-Solid Equipment
Reaction Products in A.C. Electrolysis
High Temperature Batteries with Solid Electrolyte
Pore Size Distributions in Battery Separators
Mechanism of Purification of Kroll-Process Sponge
Mixed Mechanism Kinetics of the Decomposition of N_2O
Composition Dependence of Diffusivity in Binary Gaseous Systems
Demineralization of Water by Continuous, Countercurrent Ion Exchange
Diffusion Coefficients of Hydrocarbons in Air
Gas Absorption by Entrainment from a Plunging Liquid Jet
Kinetics of Microbial Growth
Thermal Distillation within a Wetted-Wall Column
Absorption of Methyl Iodide by Aqueous Hydrazine Solutions within Spray Chambers
Absorption of Methyl Mercaptans with and without Chemical Reactors
Characteristics of Climbing Film Flow in Annular Ducts
Flow Characteristics of Dispersions
Scaling and Fouling in Boiling Liquids
Mixing in Rod Bundles

Civil Engineering

Airphoto Analysis of Ocean Outfall Dispersions
Pulp Mill Waste Disposal in Marine Waters

Civil Engineering - continued

Statistical Quality Control Applied to Asphalt Concrete
Economic Analysis for Highway Planning
Nuclear Moisture Measurement of Ocean Sediments
Compaction Pore Pressure Prediction in Dams
Construction Scheduling
Friction Pile Capacity in Silts
Settlement Estimates for Fills on Silts
Strength of Wood in Radial Tension
Virus Adsorption
Buoy Dynamics
Low Ocean Current Measurement
Construction Research
Finite Element and Matrix Analysis of Structures
Computer Applications in Predicting Water Quality
Influence of Log Handling Practices on Water Quality
Structural Dynamics of Elastic Plates and Shells
Electronic Surveying
Error Analysis of Complex Control Networks
Watershed Hydrology
Effects of Watershed Practices on Stream Sediment
Quantitative Behavior of Estuaries
Water Quality of Netarts Bay
Thermal Pollution
Environmental Engineering and Management factors for Urban and Regional
Planning of the Willamette Valley

Electrical and Electronics Engineering

High Voltage Transmission Lines
Computers
Scattering from Moving Objects
Diffraction of Dipole Radiation by a Moving, Dispersive Half Space
Surface Waves Along a Moving, Plasma Half-Space
Digital Wave Height Sensor
Independent Spatial Mode Control in Lasers
Thin and Thick Film Wave Guiding Structures
Scattering from a Rough Sea Surface
Remote Sensing
Optimization of Distributed Parameter Networks
Solid-State Devices
Wave Propagation on Lossy Transmission Lines, Taking Account of Ground
Impedance
Man-Machine Interactive Algorithms
Digital Systems
Magnetic Materials

Electrical and Electronics Engineering - continued

Switching Theory
Hydroacoustics
Integrated Circuits

Industrial Engineering

The Saury Fishery Resource
GASP Simulation Language
Fisheries System Design
Capital Budgeting
Quantitative Decision Making

Mechanical Engineering

Secondary Laminary Flow in Bends
Computer Programs for External Flows
Air Pollution from Agriculture and Forest Burning
Air Pollution Studies
Flow Coupled Diffusion
Thermodynamics
Thermal Plume Dispersion
Natural Convection in Liquid Metals
Thermal Starting Length Studies in Non-Newtonian Fluids
Unsteady Flow

Metallurgical Engineering

Fracture Mechanics
Structural Aspects of the Properties of Materials
Deformation Characteristics of Metals
Diffusion

Nuclear Engineering

Neutron Radiography
Fast Reactor Computation
Nuclear Moisture Meter for Ocean Sediments
Nuclear Processing

MAJOR FACILITIES OF THE SCHOOL OF ENGINEERING

CHEMICAL ENGINEERING - 18,600 sq. ft. of laboratory area including:

- Unit Operations Laboratory
- Electrochemical Laboratory
- Control Laboratory
- Computer Laboratory
- Various Specialty Laboratories

Major Equipment includes: EAI TR 20 Analog Computer, Instrumentation equipment, Minneapolis Honeywell visicorder, equipment to study transport phenomena, various analytical equipment including chromatographs and spectrophotometers.

CIVIL ENGINEERING - 35,400 sq. ft. of laboratory area including:

- Sanitary Engineering Laboratory
- Highway Materials Laboratory
- Transportation Laboratory
- Concrete Materials Laboratory
- Hydraulic and Fluid Mechanics Laboratory
- Soil Mechanics Laboratory
- Water Demonstration Laboratory
- Structural Laboratory
- Surveying and Photogrammetry Laboratory

Equipment includes: Materials testing machines, chromatographs, spectrophotometers, carbon analyzer and other Sanitary Engineering laboratory instruments, open channel, wave basin, wave generation and fluid measuring equipment, soil mechanics instrumentation, sediment transport channel, various boats for field studies.

ELECTRICAL AND ELECTRONICS ENGINEERING - 24,000 sq. ft. of laboratory area including:

- Analog Computer Laboratory
- Circuits Laboratory
- Communications Laboratory
- Control Laboratory
- Design Laboratory
- Digital Laboratory
- Electronics Laboratory
- Energy Conversion Laboratory
- High-Voltage Laboratory

ELECTRICAL AND ELECTRONICS ENGINEERING - continued

- Pulse Circuits Laboratory
- Radiation Laboratory
- Simulation Laboratory
- Solid-State Laboratory
- Systems Instrumentation Laboratory
- Transmission Lines Laboratory

Equipment includes: EAI 690 Hybrid Computer with FR 1300 Ampex portable tape recorder, 3 analog computers (2 PACE and 1 Comcor), Varian Unit, furnaces, high voltage equipment (350,000 AC, 400,000 DC), Miscellaneous Instrumentation, Oscilloscopes, Tape Transports, and Plotters.

INDUSTRIAL ENGINEERING - 2,000 sq. ft. systems design laboratory including:

- 21 Individual Carrels
- Control Area
- Main Laboratory

Equipment includes: Time lapse devices, 16 mm projectors, portable tape recorders, Vidicon camera, monitors.

MECHANICAL ENGINEERING - 40,000 sq. ft of laboratory area including:

- Mechanical Laboratory
- Stress Analysis
- Vibrations
- Heating and Air Conditioning
- Refrigeration
- Fuels and Lubricants
- Principles of Nuclear Engineering
- Power Plant Engineering
- Gas Turbines and Jet Engines
- Analog Computers
- Industrial Instrumentation
- Acoustical Measurement and Control
- Automotive Engineering
- Heat Transfer

Equipment includes: Instrumentation for stress analysis, Vibrations, Transport studies, Analog Computer, Fuel and Lubricant Test equipment, Automotive equipment, Gas Turbines and Heat Engines.

METALLURGICAL ENGINEERING - 7,000 sq. ft. of laboratory area including:

- Metal melting, heat treating and forming laboratory
- Metallography laboratory
- Physical properties laboratory
- x-ray analysis laboratory
- Electron microscopy laboratory
- Nature and Behavior of Materials laboratory

Equipment includes small rolling mill, ten furnaces, extensive metallography equipment, electron beam single crystal growing equipment, crystal slicer, Instron testing machine, electrical conductor creep testing equipment, Norelco x-ray diffraction unit with extensive accessories, 200 kv Baltograph radiography unit, Hitachi 125 kv electron microscope.

NUCLEAR ENGINEERING - 1,840 sq. ft. of office and laboratory space with an additional part-time use of about 15,000 sq. ft. of laboratory area in OSU Radiation, shared by research and instructional activities of other departments including:

- Instrument Laboratory
- Counting Laboratories
- X-ray Laboratory; 300 Kva, 250 Kva x-ray generators
- Gamma Radiation laboratory with 3,000 Curie Co-60 source
- Hot cell facilities
- Nuclear Reactor Analysis laboratory

Equipment includes: TRIGA Mark II reactor, AGN-201 reactor, 14 Mev Neutron Generators, Subcritical Assembly.

GRADUATE PROGRAM IN OCEAN ENGINEERING

The School of Engineering participates in the University's Sea Grant program which is funded by the National Science Foundation with a portion to be matched by State contributions.

The initial grant by NSF for one year beginning February 1, 1968 amounted to \$530,000. The second year's grant from NSF amounted to \$800,000.

The total extent of research and training carried on by the School of Engineering presently amounts to about \$250,000 per year.

Graduate study in ocean engineering is offered at Oregon State University through the School of Engineering. This program of study leads to the degree of Master of Ocean Engineering or Master of Science and Doctor of Philosophy degrees in Engineering with an emphasis on ocean engineering. These interdisciplinary programs are offered in cooperation with the Oceanography Department and other academic faculties with special interests in ocean science.

The Master of Ocean Engineering program is administered on an inter-departmental basis by a School of Engineering committee. The Master of Ocean Engineering and the Master of Science in Engineering require 45 quarter credit hours, including research. A major field of study in one of the engineering disciplines and a minor in oceanography are normally required. The Doctor of Philosophy program requires at least three years of study beyond the baccalaureate degree and includes about 135 quarter credit hours of course and thesis work.

A student in ocean engineering, depending on his specific interests, is admitted to the Department of Chemical, Civil, Electrical, Industrial, or Mechanical Engineering. A program of study is then designed to fit the individual's professional objectives and to achieve a high degree of engineering competence applied to the ocean environment.

Research

Students in this program are expected to prepare a thesis on a problem related to ocean engineering. Joint projects are frequently carried out with the Oceanography Department and other academic units.

Some of the study and research areas emphasized for development under the "Sea Grant" program are:

- . Coastal and estuarine hydrodynamics and hydraulics
- . Marine water pollution control
- . Marine geotechnique
- . Coastal structures
- . Engineering materials and electrochemical processes
- . Marine systems design
- . Instrumentation
- . Simulation
- . Fluid measurements
- . Underwater acoustics
- . Biochemical engineering
- . Marine bioacoustics

Facilities

In addition to on-campus facilities, Oregon State University maintains field laboratories and has access to the facilities of several federal laboratories. These include the following:

OSU Marine Science Center at Newport, Oregon
Yaquina Marine Biology Laboratory
Pacific Fisheries Laboratory

OSU oceanographic research vessels
Yaquina (180 feet, 900 tons)
Cayuse (80 feet)
Paiute (33 feet)

OSU Netarts Bay Research area
OSU Port Orford Marine Station
OSU Seafoods Laboratory, Astoria
Pacific Northwest Water Laboratory, USDI, FWPCA, Corvallis

M. S. THESES IN ENGINEERING
1967-68

- | | |
|---|------------------------|
| Vaughn William Abbott | Mechanical Engineering |
| "The Effect of Small Amounts of Magnesium on the Superplastic Behavior of an Aluminum-Zinc Alloy" | |
| Tsunehiro Aibara | Electrical Engineering |
| "A New Method for the Synthesis of Networks by Using Cut-set Matrices" | |
| Yoon-Goon Bae | Electrical Engineering |
| "Limit Cycle Detection of the Van der Pol Equation" | |
| Robert James Bertorello | Electrical Engineering |
| "A Zero-Crossing Analyzer for Distribution-Free Detection of a Signal in Noise" | |
| John Roger Bladholm | Industrial Engineering |
| "The Development and Application of a 'Self-Help' Industrial Training Concept for the Fashion Apparel Industry" | |
| Richard William Bradley | Electrical Engineering |
| "Real-Time Band with Compression Using Hilbert Transforms" | |
| David Kin-Poon Cheung | Electrical Engineering |
| "Compatible Field-Effect and Bipolar Transistors" | |
| Ching Hwa Chiang | Electrical Engineering |
| "Active Network Synthesis Using Operational Amplifiers" | |
| James Dennis Clarke | Civil Engineering |
| "The Evaluation of the Field Vane Shear Strength Analysis of the Glen Aiken Creek Embankment Failure" | |
| Paul Nelson Cowgeill | Electrical Engineering |
| "Design-Approach Evaluation of Multiple-Input, Model-Reference, Adaptive Control Systems" | |
| Gerald Robert Cunningham | Civil Engineering |
| "The Computer, The Computer User Group, and the Civil Engineer" | |

Tevfik Ergun	Civil Engineering
"Economic Comparisons of Different Highway Networks in a Given Region"	
Charles Clark Hansult	Mechanical Engineering
"Stress Distribution Around Butt Joints in Laminated Lumber"	
Robert Michael Johnson	Electrical Engineering
"The Three-pole, Two-zero Approximation of a Maximally Flat Time Delay Network with Constant Input Resistance"	
John William Kaakinen	Chemical Engineering
"A Mathematical Model for Differential Thermal Analysis"	
Murlan Ralph Kaufman	Electrical Engineering
"A Circuit that Responds to a Wide Range of Input Signals to Provide Reliable Automatic Triggering"	
Ying-ming Kuo	Mechanical Engineering
"Solution of Unsteady, Two-dimensional Inviscid Flows"	
Richard Lee Mittelstadt	Civil Engineering
"Consumptive Use of Surface Water by Willamette Basin Municipalities"	
William Andrew Mittelstadt	Electrical Engineering
"A Method of Improving Power System Transient Stability Using Controllable Parameters"	
Daniel Lewis Nelson	Mechanical Engineering
"Dynamic Measurement of Timoshenko Beam Shear Coefficient"	
John Dennis Patton	Mechanical Engineering
"Creep Studies on Pheasant, Narcissus and Chukar Aluminum Conductors"	
William Henderson Peek	Electrical Engineering
"A Flux-Coupled Current Measuring System with a Bandwidth from D.C. to Fifty Megahertz"	
Peter Eugene Perkins	Electrical Engineering
"The Design and Development of a Noncompressing Post-deflection Acceleration Method for Cathode-ray Tubes"	

Suvat Saguanwongse	Civil Engineering
"Sand Pumping Efficiency of a Water Ejector Apparatus"	
Veeder South III	Mechanical Engineering
"Heat and Mass Transfer Rates Associated with the Drying of Plywood Veneer Using Superheated Steam at Various Angles of Impingement"	
Torbjorn Spurkland	Civil Engineering
"The Effect of Boundary Geometry on Internal Density Currents in a Density Stratified Reservoir"	
Edward Oswald Stoffel	Mechanical Engineering
"The Effect of Entrance Configuration on Local Heat Transfer Coefficients in Subsonic Diffusers"	
William Lloyd Stubkjaer	Electrical Engineering
"A Linear Circuit Analysis Program for a Small Computer with no Auxiliary Memory"	
John Steve Summersett	Civil Engineering
"The Present Status of Plastics as an Engineering Material"	
Ghiath Abdul-Kareem Taleb-Agha	Civil Engineering
"A Treatise on Structures Without Bending"	
Kamthorn Thongurai	Electrical Engineering
"A Digital Network Simulator Using Fortran"	
Einar Oddbjorn Traa	Electrical Engineering
"An Integrated Analog Multiplier Circuit"	
Melvin Zane Waki	Civil Engineering
"Oxygen Transfer in Selected Waste Liquids"	
Jui-Tsung Yang	Civil Engineering
"A Review of Research on Shear and Diagonal Tension in Reinforced Concrete Beam"	

M.S. THESES IN ENGINEERING

1968-69

Bruce Conrad Anderson	Mechanical Engineering
"Gas-Liquid Chromatographic Determination of Low Molecular Weight Aliphatic Aldehydes in Diesel Engine Exhaust"	
Donald Gordon Anderson	Civil Engineering
"Consolidation Characteristics of Sand-Clay Mixtures"	
John Lawrence Chalfan	Electrical Engineering
"Linear Metal-Oxide-Semiconductor Integrated Circuits"	
David Wei Chen	Electrical Engineering
"A Mosfet Integrated Circuit Shift Register"	
Gordon Carter Collett	Electrical Engineering
"Learning Processes in Computing Machinery"	
Emmett Eugene Curran II	Electrical and Electronics Engineering
"Approaches to Linear, Time-Varying Systems Analysis"	
Stewart Lee Davis	Civil Engineering
"Treatment of Activated Sludge Process Effluent by Carbon Adsorption"	
Edward Leonard Dito	Civil Engineering
"The Effect of Pulverization on a Lime Stabilized Clay Soil"	
George Franklin Dotson	Civil Engineering
"Critical Buckling Load for Round Tapered Columns with Variable End Fixity"	
Charles Clifton Edgar	Electrical Engineering
"A Logarithmic Sweep for Sampling Oscilloscopes"	
Elmer Harvey Elwin	Civil Engineering
"Entering Streamflow Effects on Currents of a Density Stratified Model Reservoir"	
Dale Marion Gallaher	Electrical Engineering
"An Acceleration-Oriented Learning Controller for Second-Order Systems"	

James Hendricks Godfrey	Chemical Engineering
"Diffusion Coefficients of Binary Gas Systems: Carbon Tetra- chloride-Air, Carbon Tetrachloride-Nitrogen, Methyl Sulfide- Nitrogen, Methyl Disulfide-Nitrogen"	
Manouchehr Gojgini	Chemical Engineering
"Vapor Pressure Determination of Propylene Carbonate and Iso- Propyl Benzoate"	
Ghassan M Ihsan Hafez	Mechanical Engineering
"Computer and Heat and Air Conditioning"	
Robert James Hancock	Electrical Engineering
"Characteristics of RC Digital Filters as Bandpass Circuits"	
Ralph Wayne Hardie	Nuclear Engineering
"PERT-IV, A Two-Dimensional Perturbation Theory Code for Fast Reactors"	
John William Hudson	Industrial Engineering
"Supplier Opportunity Cost of Lost Sales in the Aluminum Industry"	
Leighton Wayne Johnson	Mechanical Engineering
"Side Launching of Marine Vessels"	
Patrick Bryan Kelly	Civil Engineering
"Design and Evaluation of a Foundation Model Testing Device"	
Soon-Mo Lee	Mechanical Engineering
"An Experimental Study of Natural Convection in Air Between a Vertical Isothermal Flat Plate and a Parallel Insulated Flat Plate"	
Duane Collins Martin	Civil Engineering
"The Effect of Mixing on the Oxygen Uptake Rate of Estuarine Bottom Deposits"	
Roy Charles Martin	Civil Engineering
"A Torsional Investigation of a Concrete I Girder"	
Stanley Kent Meyers	Mechanical Engineering
"The Design, Construction and Calibration of an Instrumented Surface for Convective Heat Transfer Studies"	
Darrell Wayne Monroe	Civil Engineering
"Disinfection of Settled and Unsettled Trickling Filter Effluent by Chlorination"	

Edward Robert Mooney, Jr.	Electrical Engineering
"A Static Frequency Converter Speed Control System for the Three-Phase Squirrel-Cage Induction Motor"	
Hiro Moriyasu	Electrical Engineering
"High Speed Adaptive Logic Circuit for Adaptive Signal Processing"	
James Harold Nail, Jr.	Nuclear Engineering
"A Method for Calculation of Group-Averaged Resonance Parameters"	
Chirasakdi Poonpol	Electrical Engineering
"Characteristics of Coupled Transmission Lines with Various Terminations"	
Bruce Douglas Scott	Chemical Engineering
"Motion Picture Study of a Vertical Climbing Film in an Annular Duct"	
Roger Tokumi Shigehara	Mechanical Engineering
"Particulate and Total Gaseous Hydrocarbon Emissions from a Gas Heated Veneer Dryer"	
Phojana Simasathien	Electrical Engineering
"Recognition of Selected Spoken Digits"	
Pala Sookawesh	Industrial Engineering
"Economic Comparison of Alternative Power Resource Development Plans in the Lower Mekong Basin"	
Richard Alan Spaulding	Electrical Engineering
"Field-Effect Transistor Noise at Low Temperatures"	
Henry Vincent Steinkamp	Civil Engineering
"Vibration Induced Pore Pressure Development in Graded Sands"	
Julie Lee Vincent	Industrial Engineering
"An Economic Comparison of Hot Metal and Cold Type Composition of Display Advertising"	
Dennis James Wilkins	Electrical and Electronics Engineering
"A Sampling Criterion Enabling Signal Reconstruction with Specified Limit Error"	
Jin-chyuan Yu	Mechanical Engineering
"Attitude Stability of a Symmetrical Satellite with Translational-Rotational Coupling"	

PH.D. THESES IN ENGINEERING
1967-68

- | | |
|--|------------------------|
| David Lee Brenchley | Mechanical Engineering |
| "An Experimental Investigation of Combustion Products Through
a Flat, Laminar, Premixed Hydrocarbon-Air Flame" | |
| Alan B. Chambers | Mechanical Engineering |
| " A Model of Ciliary Streaming in the Respiratory System" | |
| Kostas Nicolaus Dervitsiotis | Industrial Engineering |
| "An Investigation of the Influence of Choice Structure on Decision
Making Behavior" | |
| William Ernest Genetti | Chemical Engineering |
| "Heat Transfer in a Fluidized Bed Tubular Heat Exchanger" | |
| Joseph Grant | Civil Engineering |
| "Dynamic Response of Steel Structures with Semirigid Connections" | |
| John Roger Kosorok | Electrical Engineering |
| "A Computer Control Algorithm for a Nuclear Reactor Support
System" | |
| William Lee Mandery | Civil Engineering |
| "Effect of Vertical Compressive Stress on Shear Strength of Wood
Beams" | |
| Samuel Seiji Matsuo | Electrical Engineering |
| "Properties of Flash-Evaporated Gallium Arsenide" | |
| Bruno Richard Pagnani | Mechanical Engineering |
| "An Explicit Finite-Difference Solution for Natural Convection in
Air in Rectangular Enclosures" | |
| Peter Turner Rux | Electrical Engineering |
| "Design and Evaluation of Glass Delay Line Content-Addressable
Memory System" | |
| David Alvin Seamans | Electrical Engineering |
| "Ternary Arithmetic in Direct Digital Control Systems" | |
| Yuan-Shou Shen | Mechanical Engineering |
| "The Phase Diagram of Zirconium and Chromium with Special
Reference to the Transformation in the Intermetallic Compound
$ZrCr_2$ " | |

Kenneth Edward Spencer

Electrical Engineering

"A signal-Processed Antenna System and the Simulation of the
Effects of Balanced-Mixer Frequency Conversion"

Leale Elston Streebin

Civil Engineering

"Comparison Between Thermophilic and Mesophilic Aerobic
Biological Treatment of a Synthetic Organic Waste"

John Peter van Gigch

Industrial Engineering

"The Impact of Technology on the Mental Content of Work in
Industrial Operations"

PH. D. THESES IN ENGINEERING
1968-69

- | | |
|---|------------------------|
| Michael Donavon Brady | Chemical Engineering |
| "A Study of Thermal Effects Involved in the Performance of a Wetted-Wall Column" | |
| Albert Edward Brandenstein | Electrical Engineering |
| "Analysis of the D. C. Electric Field for a Pipeline in a Three Layered Earth" | |
| Sih Yao Cheng | Electrical Engineering |
| "Learning Control of Linear Systems with Periodic Inputs Using a Method of Harmonic Analysis" | |
| Glenn Frank Cochrane, Jr. | Mechanical Engineering |
| "A Numerical Solution for Heat Transfer to Non-Newtonian Fluids with Temperature-Dependent Viscosity for Arbitrary Conditions of Heat Flux and Surface Temperature" | |
| Dennis Richard Delzer | Electrical Engineering |
| "Vacuum Evaporated Dielectrics in MOS Structures" | |
| George Joseph Dooley III | Mechanical Engineering |
| "Effects of Selected Minor Alloying Additions on the Structure and Deformation Characteristics of Beryllium" | |
| Alan Winthrop Ede | Electrical Engineering |
| "Space-Charge-Limited Currents in Silicon Using Gold Contacts" | |
| Claude Steward Lindquist | Electrical Engineering |
| "Analysis and Synthesis of Active Transmission Lines" | |
| Max Joseph Morgan | Electrical Engineering |
| "An Interactive Man-Hybrid Computer Parameter Search Algorithm Allowing Experience Dependent Performance Measures for Dynamic System Design" | |
| Roger Edwin Scholl | Civil Engineering |
| "Dynamic Analysis of Three-Dimensional Frames" | |
| Richard Joseph Sherman | Electrical Engineering |
| "On Output Statistics of Nonlinear Devices: (1) Third and Higher Order Information, (2) Quadriphase Carrier Reconstruction, (3) Analysis of Point Processes" | |

John Edward Smathers	Electrical Engineering
"Distributed Logic Memory Computer for Process Control"	
Gerald Eugene Swiggett	Chemical Engineering
"Gas Absorption by Entrainment from a Plunging, Liquid Jet"	
Salah Mohammad Yousif	Electrical Engineering
"Optimal Governor and Excitation Control of Power Systems with Damping"	

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