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UNIVERSITY OF ILLINOIS

Urbana Departments

FIRST SEMESTER COURSES

Navy V-12 and Engineering Civilians

Exclusive of Freshman Engineers

Sixteen-Week Courses

November 2, 1945, to February 23, 1946

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UNIVERSITY OF ILLINOIS

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URBANA, ILLINOIS
OCTOBER, 1945

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NOTE: *The general offices of the University are open weekdays from 8 a.m. to 12 m. and from 1 to 5 p.m. except Saturday afternoon.*

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OFFICES OF COLLEGES AND SCHOOLS

College of Agriculture.....104 New Agriculture Building
College of Commerce and Business Administration.....214 Commerce Building
College of Education.....105 Gregory Hall
College of Engineering.....300 Engineering Hall
College of Fine and Applied Arts.....110 Architecture Building
College of Law.....301 Altgeld Hall
College of Liberal Arts and Sciences.....203 Lincoln Hall
College of Veterinary Medicine.....Veterinary Pathology Laboratory
School of Journalism.....119 Gregory Hall
Library School.....331 Library Building
School of Physical Education (Courses for Men).....107 Huff Gymnasium
School of Physical Education (Courses for Women)..117 Woman's Gymnasium
Graduate School.....109 Administration Building (East)
Division of Special Services for War Veterans.....209 Lincoln Hall

BUILDINGS

University buildings are designated by the following abbreviations:

Architecture Building.....Arch.
Ceramics Building.....Cer.
Chemistry Annex.....Chem. Annex
Civil Engineering Surveying Building...C.E.S.B.
Commerce Building.....Com.
Electrical Engineering Laboratory.....E.E.L.
Engineering Hall.....E.H.
Gregory Hall.....G.H.
Huff Gymnasium.....Huff Gym.
Lincoln Hall.....L.H.
Mathematics Building.....Math.
Mechanical Engineering Laboratory.....M.E.L.
Metallurgical Laboratory.....Met. Lab.
Mining Laboratory.....Min. Lab.
New Agriculture Building.....New Agr.
Noyes Laboratory of Chemistry.....Noyes Lab.
Old Gymnasium Annex.....Old Gym. Annex
Physics Laboratory.....P.L.
Talbot Laboratory.....T.L.
Transportation Building.....T.B.

LIBRARY
UNIVERSITY OF ILLINOIS

COURSES OFFERED FIRST SEMESTER OF 1945-1946

ACCOUNTING

Courses for Undergraduates

Accy. BA5. Principles of Accounting.—

Credit	Section	Hours	Days	Room	Instructor
3 hours	J	8	TTS	122 Com.	

Accy. 1b. (Navy BA6). Accounting Procedure.—A continuation of Accy. 1a. Credit is given for Accy. 1a without Accy. 1b. *Prerequisite:* Accy. 1a or 1e, or BA5.

3 hours[1]	B	9	MWF	106 Com.	FILBEY
[1]Seniors receive	C	10	MWF	222 Com.	LITTLETON
only 2 hours	K	9	TTS	115 Com.	NEWCOMER
credit.					

AERONAUTICAL ENGINEERING

Courses for Undergraduates

Aero.E. 1. (Navy M.E. 14). Aerodynamics.—*Prerequisite:* T.A.M. 1.

Credit	Section	Hours	Days	Room	Instructor
3 hours	A	11	MWF	117 T.B.	

Aero.E. 2. Aircraft Materials and Processes.—*Prerequisite:* T.A.M. 3; Aero.E. 1.
3 hours A 8 MWF 117 T.B.

Aero.E. 22. Aircraft Structures.—*Prerequisite:* T.A.M. 3 and 63; Aero.E. 1.
3 hours A 9 TTS 105 T.B.

Aero.E. 23. Aircraft Structures.—*Prerequisite:* Aero.E. 22; Math. 16.
3 hours To be arranged

Aero.E. 33. Aircraft Detail Design.—*Prerequisite:* G.E.D. 3; Aero.E. 22.
2 hours To be arranged

Aero.E. 43. Airplane Design.—*Prerequisite:* T.A.M. 2; Aero.E. 22.
3 hours To be arranged

Aero.E. 44. Airplane Design.—*Prerequisite:* Aero.E. 2, 23, and 43.
3 hours To be arranged

Aero.E. 62. Aerodynamics Laboratory.—*Prerequisite:* T.A.M. 5; Aero.E. 43.
2 hours To be arranged

Aero.E. 64. Aircraft Structures Laboratory.—*Prerequisite:* Aero.E. 23.
1 hour To be arranged

Aero.E. 66. Aircraft Engine Laboratory.—*Prerequisite:* M.E. 9.
2 hours To be arranged

BUSINESS ORGANIZATION AND OPERATION

Courses for Undergraduates

B.O.O. 2. (Navy BA19). Marketing Organization and Operation.—*Prerequisite:* Econ. 1 or 2, or Econ. BA1 and BA2; junior standing.

Credit	Section	Hours	Days	Room	Instructor
3 hours	A	8	MWF	305 Com.	JONES
	C	10	MWF	119 Com.	HURGY
	D	11	MWF	222 Com.	CONVERSE

CERAMIC ENGINEERING

Courses for Undergraduates

Cer.E. 10. Cements.—*Prerequisite:* Chem. 40; registration in Cer.E. 28.

Credit	Section	Hours	Days	Room	Instructor
2 hours	Rec.	11	TT	214 Cer.	

Cer.E. 14. Glasses and Glazes.—*Prerequisite:* Cer.E. 5; registration in Chem. 40.

3 hours	Rec.	1	TT	218 Cer.
	Lab.	2–5	TT	113 Cer.

Cer.E. 28. Pyrochemical Problems.—*Prerequisite:* Cer.E. 14; Chem. 40.

2 hours	Rec.	8	TT	218 Cer.

Cer.E. 31. Introduction to Ceramic Engineering.—*Prerequisite:* Sophomore standing in ceramic engineering.

3 hours	Rec.	11	TT	218 Cer.
	Lab.	2–5	W	113 Cer.

Cer.E. 33. Ceramic Technology.—*Prerequisite:* Junior standing in ceramic engineering.

5 hours	Rec.	8	MWF	218 Cer.
	Lab.	2–5	MF	113 Cer.

Cer.E. 35. Principles of Drying.—*Prerequisite:* Credit or registration in Cer.E. 33.

3 hours	Rec.	11	MWF	218 Cer.

Cer.E. 38. Dryer and Furnace Design.—*Prerequisite:* T.A.M. 3; Cer.E. 35 and 36.

2 hours	Lab.	2–5	MW	212 Cer.

Cer.E. 96. Research Methods.—*Prerequisite:* Senior standing in ceramic engineering.

1 to 3 hours* To be arranged

Cer.E. 98. Thesis.—*Prerequisite:* Consent of Head of Department of Ceramic Engineering.

1 to 3 hours* To be arranged

Courses for Graduates

Cer.E. 101a. Chemistry of the Compounds of Silicon.—*Prerequisite:* Elementary courses in organic and physical chemistry. (1 unit). Arrange. Professor ANDREWS.

Cer.E. 102. General Technology of the Silicate Industries.—*Prerequisite:* Elements of mineralogy and physical chemistry. Lectures, seminar, laboratory. (1 to 2 units).* Arrange.

(a) **Ceramic Materials and Processes.**—

(b) **Drying and Firing Processes.**—Professor HURSH.

(c) **Enamels and Equilibrium Studies.**—Professor ANDREWS.

(d) **Refractories.**—Professors ANDREWS and HURSH.

Cer.E. 103. Chemistry of Silicates.—Laboratory to supplement Cer.E. 101, which must precede or accompany it. (1 to 2 units).* Arrange. Professors ANDREWS and HURSH, Associate Professor BADGER.

Cer.E. 104. Technology of Glass.—Lectures and laboratory. (1 to 2 units).* Arrange. Associate Professor BADGER.

Cer.E. 105. Methods of Ceramic Research.—Lectures. (1 unit). Arrange. Members of department.

Cer.E. 106. Research.—(1 to 4 units).* Professors ANDREWS and HURSH, Associate Professor BADGER.

CHEMISTRY

Courses for Undergraduates

Chem. C1a. Inorganic Chemistry.—

Credit	Section	Hours	Days	Room	Instructor
4 hours	Lect.	8	WF	112 Chem. Annex	
	Quiz A	8	M	8 Chem. Annex	
	Lab. A	2–5	Tu	201 Chem. Annex	

Chem. 2a-C6. Inorganic Chemistry and Engineering Materials.—*Prerequisite:* Chem. C1a or Chem. 1, 2, or 3.

4 hours	Lect. A	9	WF	116 Noyes Lab.
	Quiz A	9	M	116 Noyes Lab.
	Lab. A	2–5	F	201 Chem. Annex
	Quiz C	11	M	247 N.H.
	Lab. C	2–5	Th	201 Chem. Annex

*In registering for a course with variable credit, as 1 to 2 units or 2 to 4 hours, each student puts on his study-list the number of units or hours for which he intends to take the course.

Chem. ~~10~~ 3 Quantitative ~~Qualitative~~ Analysis.—*Prerequisite:* Chem. C1a and 2a-C6, or equivalent.

Credit	Section	Hours	Days	Room	Instructor
5 hours	Lect.	11	M	116 Noyes Lab.	
	Quiz	11	WF	116 Noyes Lab.	
	Lab.	1–4	MWF	310 Chem. Annex	

CIVIL ENGINEERING

Courses for Undergraduates

C.E. 1. Plane Surveying.—*Prerequisite:* Math. 4, M1, or M3; G.E.D. 1, 4, or D1N.

Credit	Section	Hours	Days	Room	Instructor
3 hours	E	8–10	MWF	201 C.E.S.B.	

C.E. 2. Topographic Surveying.—*Prerequisite:* C.E. 1 or 1N.

3 hours	E	10–12	MW	201 C.E.S.B.
		1–5	Th	201 C.E.S.B.

C.E. 8N. Theory of Reinforced Concrete.—*Prerequisite:* C.E. 7N or 61.

3 hours	E	8	MWF	320 E.H.
	F	8	TT	320 E.H.
		11	S	320 E.H.

C.E. 9N. Elementary Structural Design in Steel and Wood.—*Prerequisite:* C.E. 7N or 61.

3 hours	E	9–12	MF	406 E.H.
		10	W	406 E.H.
	F	8–11	MF	211 E.H.
		10	W	208 E.H.

C.E. 10N. Curves and Earthwork.—*Prerequisite:* C.E. 1N or 1.

3 hours	E	11	TT	102 E.H.
		2–5	W	202 C.E.S.B.

C.E. 11aN. (Navy C.E. 11 in part). Concrete Structures and Foundations.—*Prerequisite:* C.E. 8N.

2 hours	E	1–4	TT	211 E.H.

C.E. 12N. Advanced Structural Steel Design.—*Prerequisite:* C.E. 9N.

5 hours	E	9	MWF	400 E.H.
		1–4	MW	309 E.H.

C.E. 15. General Surveying.—*Prerequisite:* Math. 4, M1, or M3; G.E.D. 1, 4, or D1N.

3 hours	E	1–4	MF	109 C.E.S.B.
	F	8–11	TT	109 C.E.S.B.

C.E. 15N. Soil Mechanics.—*Prerequisite:* Registration in C.E. 66.

3 hours	Rec.	9	TT	112 T.L.
	Lab. E	9–12	S	207 T.L.
	Lab. F	1–4	F	207 T.L.

All sections must have 9-12 S open for latter part of semester.

C.E. 20. (Navy C.E. 17 in part). Highway Construction.—*Prerequisite:* C.E. 2, 15, 18, or consent of instructor.

3 hours	E	8	MWF	102 E.H.

C.E. 24N. (Navy C.E. 16). Airport Design.—*Prerequisite:* C.E. 20.

3 hours	E	8	TT	321 E.H.
		9–12	S	309 E.H.

C.E. 26. Economics of Railway Location and Operation.—*Prerequisite:* C.E. 3 or 10N.

3 hours	E	9	TT	102 E.H.
		One hour to be arranged		

C.E. 30. (Navy C.E. 17 in part). Highway Materials Laboratory.—*Prerequisite:* Junior standing in engineering, architecture, or landscape architecture.

1 hour	E	2–5	F	201 T.L.
	F	1–4	W	201 T.L.

C.E. 35. (Navy C.E. 4 in part). Plain Concrete.—*Prerequisite:* Junior standing in engineering, architecture, or landscape architecture.

2 hours	E	11	W	112 T.L.
		1–4	Tu	4 T.L.
	F	9	W	112 T.L.
		1–4	Th	4 T.L.

C.E. 36. Construction Materials.—*Prerequisite:* Junior standing in engineering, architecture, and landscape architecture.

1 hour	E	9	T	400 E.H.

CIVIL ENGINEERING (continued)

C.E. 40N. (Navy C.E. 14). Water Supply.—*Prerequisite:* T.A.M. 3, 4, and 64; M.E. 1 or 3aN.

Credit	Section	Hours	Days	Room	Instructor
3 hours	E	11	MF	208 E.H.	
		1–4	M	214 E.H.	
	F	10	MF	208 E.H.	
		1–4	M	211 E.H.	

C.E. 41. (Navy C.E. 13). Sewerage.—*Prerequisite:* T.A.M. 4 and 64.

3 hours	E	11	TT	208 E.H.	
		1–4	F	214 E.H.	

C.E. 60. Bridge and Building Construction.—*Prerequisite:* Sophomore standing.

3 hours	E	2	MWF	205 E.H.	

C.E. 61. Structural Stresses.—*Prerequisite:* Registration or credit in T.A.M. 3.

4 hours	E	11	MWF	400 E.H.	
		1–4	Tu	406 E.H.	

C.E. 66. (Navy C.E. 11 in part). Earth and Masonry Structures.—*Prerequisite:* C.E. 63 or 8N.

3 hours	E	10	MWF	320 E.H.	
	F	11	MWF	320 E.H.	

C.E. 67. Statically Indeterminate Structures.—*Prerequisite:* C.E. 62 or 8N.

3 hours	E	9	TT	320 E.H.	
		One hour to be arranged			

C.E. 90. (Navy G.E. 5). Contracts and Specifications.—*Prerequisite:* Senior standing in engineering or architecture.

	E	10	TT		
2 hours	~~E~~ F	11	TT	321 E.H.	

C.E. 92. (Navy G.E. 4). Technical Reports.—*Prerequisite:* Junior standing in engineering.

2 hours	~~E~~	~~2–4~~	~~W~~	~~102 E.H.~~	
	~~F~~ E	10–12	Th	322 E.H.	

C.E. 98. Thesis.—*Prerequisite:* Senior standing and consent of head of department.

1 to 3 hours*		To be arranged			

ECONOMICS

Courses for Undergraduates

Econ. BA1. Principles of Economics.—

Credit	Section	Hours	Days	Room	Instructor
3 hours	C	10	MWF	215 Com.	
	E	1	MWF	115 Com.	
	L	10	TTS	123 Com.	

Econ. BA2. Economic Principles and Problems.—*Prerequisite:* Econ. BA1.

3 hours	B	9	MWF	222 Com.	Mayer
	D	11	MWF	125 Com.	Kemmerer
	F	2	MWF	310 Com.	Dickinson

ELECTRICAL ENGINEERING

Courses for Undergraduates

E.E. 1N. Electricity and Magnetism.—*Prerequisite:* Physics PH2; registration in Math. M5.

Credit	Section	Hours	Days	Room	Instructor
3 hours	Quiz A	11	TT	205 E.H.	
	Lab. A	2–5	Tu	200 E.E.L.	
	Lab. B	1–4	Th	200 E.E.L.	

E.E. 4. (See E.E. 10aN).

E.E. 4N. Electric and Magnetic Circuits.—*Prerequisite:* E.E. 3N. This course may be used as the equivalent of E.E. 26 and 76 if preceded by E.E. 3N and accompanied by E.E. 12aN.

4 hours	Quiz A	10	MWF	305 E.H.	
	Comp. A	10	TT	305 E.H.	
	Lect. A	8	W	215 E.E.L.	
	Lab. A	2–5	M	200 E.E.L.	

E.E. 5. (See E.E. 11aN).

*In registering for a course with variable credit, as 1 to 2 units or 2 to 4 hours, each student puts on his study-list the number of units or hours for which he intends to take the course.

E.E. 5bN. Electron Tubes and Circuits.—*Prerequisite:* E.E. 1N; registration in E.E. 3N. This course may be used as the equivalent of E.E. 50.

Credit	Section	Hours	Days	Room	Instructor
3 hours	Quiz A	11	TT	302 E.E.L.	
	Quiz B	1	TT	302 E.E.L.	
	Lab. A	9–12	M	302 E.E.L.	
	Lab. B	2–5	M	302 E.E.L.	

E.E. 6bN. Electron Tubes and Circuits.—*Prerequisite:* E.E. 5bN.

3 hours	Quiz A	9	TT	302 E.E.L.
	Quiz B	1	MW	302 E.E.L.
	Lab. A	2–5	F	302 E.E.L.
	Lab. B	8–11	S	302 E.E.L.

E.E. 7N. High Frequency Circuits.—*Prerequisite:* E.E. 4N and 6bN. This course replaces, in part, E.E. 48 and 51.

5 hours	Quiz A	8	MTWTF	305 E.H.
	Lab. A	2–5	M	311 E.E.L.
	Lab. B	2–5	W	311 E.E.L.

E.E. 8N. High Frequency Circuits.—*Prerequisite:* E.E. 7N. This course replaces, in part, E.E. 52 and 53.

5 hours	Quiz A	11	MTWTF	305 E.H.
	Lab. A	2–5	Tu	311 E.E.L.
	Lab. B	2–5	Th	311 E.E.L.

E.E. 9aN. Electrical Measurements.—*Prerequisite:* E.E. 1N; registration in E.E. 3N.

3 hours	Quiz A	11	MWF	205 E.H.
	Lab. A	2–5	Tu	110 E.E.L.

E.E. 10N. Direct Current Apparatus and Circuits.—*Prerequisite:* Physics PH2; Math. M6 or equivalent. This course may be used as the equivalent of E.E. 11 and 61 if followed by E.E. 11N.

4 hours	Quiz A	11	MWF	312 E.H.
	Lab. A	9–12	Tu	214 E.E.L.

E.E. 10aN. Direct Current Apparatus and Circuits.—*Prerequisite:* Physics PH2; Math. M6 or equivalent. This course may be used as the equivalent of E.E. 4 and 64.

3 hours	Quiz A	10	TT	312 E.H.
	Lab. A	2–5	Th	214 E.E.L.

E.E. 11. (See E.E. 10N).

E.E. 11N. Alternating Current Apparatus and Circuits.—*Prerequisite:* E.E. 10N. This course may be used as the equivalent of E.E. 12 and 62 if preceded by E.E. 10N.

4 hours	Quiz A	1	MWF	305 E.H.
	Lab. A	2–5	Th	200 E.E.L.

E.E. 11aN. Alternating Current Apparatus and Circuits.—*Prerequisite:* E.E. 10aN. This course may be used as the equivalent of E.E. 5 and 65.

3 hours	Quiz A	11	TT	105 E.H.
	Lab. A	1–4	F	214 E.E.L.

E.E. 12. (See E.E. 11N).

E.E. 12aN. Direct Current Machinery.—*Prerequisite:* E.E. 3N; registration in E.E. 4N.

4 hours	Lect. A	8	Th	215 E.E.L.
	Quiz A	9	MWF	305 E.H.
	Lab. A	8–11	S	200 E.E.L.

E.E. 13aN. Alternating Current Machinery (Ia).—*Prerequisite:* E.E. 4N and 12aN. This course replaces, in part, E.E. 35 and 85.

4 hours	Lect. A	9	Th	215 E.E.L.
	Quiz A	11	MWF	105 E.H.
	Lab. A	2–5	M	200 E.E.L.
	Lab. B	2–5	W	200 E.E.L.

E.E. 14. Wiring and Illumination.—*Prerequisite:* Sophomore standing or equivalent.

3 hours	A	10	MWF	102 E.H.

E.E. 14aN. Electrical Design.—*Prerequisite:* E.E. 4N and 12aN.

2 hours	Lab. A	1–3	MW	314 E.H.
	Lab. B	{9–12	Tu	314 E.H.
		{1–3	F	314 E.H.

E.E. 15N. Electrical Engineering Laboratory.—*Prerequisite:* E.E. 13aN. This course replaces, in part, E.E. 36 and 86.

4 hours	Quiz A	8	MWF	105 E.H.
	Lect. A	9	M	215 E.E.L.
	Lab. A	2–5	Tu	200 E.E.L.
	Lab. B	2–5	Th	200 E.E.L.

E.E. 25. Introduction to Circuit Analysis.—*Prerequisite:* Physics 1b, 3b; Math. 9; registration in Math. 9a or 16; registration in E.E. 75.

4 hours	Quiz A	9	MTWTF	105 E.H.

E.E. 26. (See E.E. 4N).

E.E. 35. (See E.E. 13aN).

ELECTRICAL ENGINEERING (continued)

E.E. 36. (See E.E. 15N).

E.E. 48. (See E.E. 7N).

E.E. 50. (See E.E. 5bN).

E.E. 51. (See E.E. 7N).

E.E. 52. (See E.E. 8N).

E.E. 61. (See E.E. 10N).

E.E. 62. (See E.E. 11N).

E.E. 64. (See E.E. 10aN).

E.E. 65. (See E.E. 11aN).

E.E. 75. Electrical Engineering Laboratory.—*Prerequisite:* Registration in E.E. 25.

Credit	Section	Hours	Days	Room	Instructor
2 hours	Lect. A	8	Tu	215 E.E.L.	
	Lab. A	2–5	W	200 E.E.L.	

E.E. 76. (See E.E. 4N).

E.E. 85. (See E.E. 13aN).

E.E. 86. (See E.E. 15N).

E.E. 95-96. Seminar.—*Prerequisite:* Senior standing in electrical engineering.

1 hour	A	8	Tu	322 E.H.
	B	9	Tu	322 E.H.
	C	1	Tu	322 E.H.
	D	8	Th	322 E.H.
	E	1	Th	322 E.H.

Courses for Graduates

Note: Entrance on graduate work in electrical engineering presupposes the equivalent of the full undergraduate course in that subject. The undergraduate courses in electrical engineering (except E.E. 4, 5, and 14) are open for minor credit to students in other departments who have the proper prerequisite.

(The separate courses under the general numbers 101, 102, 103, and 104 may be taken simultaneously.)

E.E. 101a. Graduate Seminar.—Required of all graduate students. (No credit). Arrange. Professor EVERITT.

E.E. 101. Advanced Courses in Alternating Currents.—(½ to 2 units).* Arrange.
- (b) Circuit Transients.—Professor KNIGHT.
- (c) Machine Transients.—Professor KEENER.
- (d) Symmetrical Components.—Professor KRAEHENBUEHL.
- (e) Advanced Communication Networks.—Associate Professor SKRODER.
- (f) Advanced Alternating Current Machinery.—Professor KEENER.

E.E. 102. Waves, Generation and Utilization.—(½ to 2 units).* Arrange.
- (a) Electromagnetic Fields and Radiating Systems.—Professor EVERITT.
- (b) Electroacoustical Systems.—Professor EVERITT.

E.E. 103. Electric Design.—(1 to 3 units).* Arrange.
- (a) Power Plant Design.—Associate Professor ARCHER.
- (b) Machine Design.—Associate Professor ARCHER.
- (c) Illumination Practice and Design.—Professor KRAEHENBUEHL.
- (d) Power Transmission Systems.—Associate Professor FAUCETT.
- (e) Principles of Servo-Mechanisms and Automatic Control Devices.—Associate Professor FETT.

E.E. 104. Vacuum Tubes and Electronic Control.—(1 unit). Arrange.
- (a) Theoretical Electronics.—Associate Professor FETT.
- (b) Vacuum Tube Circuit Analysis.—Professor EVERITT.
- (c) Photoelectric Cells, Control Tubes, and Inverters.—Associate Professor FETT.

E.E. 105. Electrical Engineering Research.—(1 to 3 units).* Professors EVERITT, TYKOCINER, KNIGHT, KRAEHENBUEHL, and KEENER, Associate Professors FAUCETT, ARCHER, SKRODER, and FETT.

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*In registering for a course with variable credit, as 1 to 2 units or 2 to 4 hours, each student puts on his study-list the number of units or hours for which he intends to take the course.

ENGINEERING

Courses for Undergraduates

Eng. 10a. (Navy G.E. 1). Economics of Engineering.—*Prerequisite:* Senior standing.

Credit	Section	Hours	Days	Room	Instructor
2 hours	A	8	TT	117 T.B.	

Eng. 10b. (Navy G.E. 2). Economics of Engineering.—*Prerequisite:* Eng. 10a.

2 hours	A	9	TT	117 T.B.	

Eng. 40. Transportation.—*Prerequisite:* One year entrance credit in algebra and plane geometry.

2 hours	A	1	TT	117 T.B.	

Eng. 41. Transportation.—*Prerequisite:* Math. 2 or 3, and 4.

3 hours	A	8	MWF	214 T.B.	

Eng. 92. Engineering Law.—*Prerequisite:* Senior standing in engineering or architecture.

3 hours	A	10	MWF	101 E.H.	

ENGLISH

Courses for Undergraduates

Engl. E2. Oral and Written Composition.—*Prerequisite:* One semester of rhetoric.

Credit	Section	Hours	Days	Room	Instructor
3 hours	E1	1	MWF	19 Com.	
	F1	2	MWF	123 Com.	

Rhet. 10N. Business Letter Writing.—*Prerequisite:* Rhet. 1 and 2, or Engl. E1 and E2.

2 hours	A	9	TT	123 Com.	

GENERAL ENGINEERING DRAWING

Courses for Undergraduates

G.E.D. D1N. Elements of Drawing.—

Credit	Section	Hours	Days	Room	Instructor
2 hours	C8	8–11	TT	207 T.B.	

G.E.D. D2N. Descriptive Geometry.—*Prerequisite:* G.E.D. D1N or equivalent.

2 hours	A8	8–11	MF	207 T.B.	
	D8	1–4	TT	207 T.B.	

G.E.D. 3. Aircraft Drafting and Lofting.—*Prerequisite:* G.E.D. 1 or 4, or G.E.D. D1N and 2 or D2N.

2 hours	B5	1–4	MF	308 T.B.	

G.E.D. 12. Graphical Calculations.—*Prerequisite:* G.E.D. D1N; Math. M2 or M4 or equivalent.

1 hour	B8	3–5	W	207 T.B.	
	C8	8–10	S	207 T.B.	
	D8	10–12	S	207 T.B.	

GERMAN

Courses for Undergraduates

German 1. Elementary Course.—

Credit	Section	Hours	Days	Room	Instructor
4 hours[1]	A	8	MTWT	303a L.H.	

[1]Seniors receive only 3 hours credit.

HISTORY

Courses for Undergraduates

Hist. H2. Historical Background of Present World War.—

Credit	Section	Hours	Days	Room	Instructor
2 hours	Lect.	11	Th	100 G.H.	WELTIN
	Rec. A	11	M	326 L.H.	WELTIN
	Rec. B	11	W	243 Armory	WELTIN
	Rec. C	10	F	238 L.H.	WELTIN

MATHEMATICS

Courses for Undergraduates

Math. M1. Mathematical Analysis.—*Prerequisite:* Two units of high school mathematics.

Credit	Section	Hours	Days	Room	Instructor
5 hours	E	1	MTWTF	154 Math.	

Math. M2. Mathematical Analysis.—*Prerequisite:* Math. M1 or equivalent.

5 hours	E	1	MTWTF	158 Math.
	G	3	MTWTF	4 G.H.

Math. M5. Calculus.—*Prerequisite:* Math. M1 and M2 or equivalent.

5 hours	A	8	MTWTF	208 E.H.
	B	9	MTWTF	156 Math.
	E	1	MTWTF	162 Noyes Lab.

Math. M6. Integral Calculus.—*Prerequisite:* Math. M5 or equivalent.

3 hours	A	8	MWF	214 Cer.
	C	10	MWF	156 Math.
	E	1	MWF	300 Noyes Lab.

Math. 9a. Calculus (Special Topics).—*Prerequisite:* Math. 7 and 9.

2 hours	C	10	TT	9 G.H.

MECHANICAL ENGINEERING

Courses for Undergraduates

M.E. 1. Steam, Air, and Gas Machinery.—*Prerequisite:* Math. 9; Physics 1 and 3.

Credit	Section	Hours	Days	Room	Instructor
3 hours	N	1	MWF	217 M.E.L.	

M.E. 1N. Kinematics.—*Prerequisite:* Credit or registration in T.A.M. 2 (Navy A2).

2 hours	L	1	Tu	114 T.B.
		2–5	Th	112 T.B.

M.E. 3aN. Heat Power Ia.—*Prerequisite:* M.E. 10 or 4aN.

3 hours	L	1	MW	216 M.E.L.
		2–5	W	204 M.E.L.
	N	9	TT	216 M.E.L.
		8–11	S	204 M.E.L.

M.E. 3N. Heat Power I.—*Prerequisite:* M.E. 13 or 4N.

5 hours	P	8	MWF	216 M.E.L.
		9–12	TT	204 M.E.L.

M.E. 4aN. Thermodynamics.—*Prerequisite:* Physics PH2 or 1b and 3b; T.A.M. 2 (Navy A2).

3 hours	E	10	MWF	202 T.B.

M.E. 5. Locomotives.—*Prerequisite:* Registration in T.A.M. 2 and M.E. 13.

3 hours	A	To be arranged

M.E. 6w. Power Plant Equipment.—*Prerequisite:* Registration in M.E. 14.

3 hours	P	8	MWF	216 M.E.L.

M.E. 7. Internal Combustion Engines.—*Prerequisite:* M.E. 3 or 6w.

3 hours	N	1	MWF	216 M.E.L.

M.E. 7N. Machine Design.—*Prerequisite:* T.A.M. 2 (Navy A2); credit or registration in T.A.M. 3.

3 hours	N	9–11	MWF	114 T.B.

M.E. 8N. Mechanics of Machinery.—*Prerequisite:* M.E. 1N.

3 hours	P	2–4	MWF	216 T.B.

[**M.E. 10. Thermodynamics.**—*Prerequisite:* Math. 9; Physics 1 and 2. Not given in 1945. Register in M.E. 4aN.]

M.E. 10N. Naval Machinery.—

2 hours	P	9	W	107 M.E.L.
		9–12	F	204 M.E.L.
	R	9	Th	107 M.E.L.
		8–11	S	204 M.E.L.

M.E. 11N. Heat Power II: Internal Combustion Engines.—*Prerequisite:* M.E. 3N and 4N.

5 hours	P	1	MWF	216 M.E.L.
		2–5	TT	204 M.E.L.

M.E. 12N. Heat Power III: Steam Power.—*Prerequisite:* M.E. 10N and 11N.

5 hours	P	9–11	MWF	112 T.B.
		1–4	Tu	112 T.B.

M.E. 13. Thermodynamics.—*Prerequisite:* Math. 9; Physics 1 and 2.

3 hours	Q	8	MF	206 T.B.
		9–11	Tu	206 T.B.

M.E. 13N. Refrigeration.—*Prerequisite:* M.E. 3N and 4N.

Credit	Section	Hours	Days	Room	Instructor
3 hours	P	8	MWF	217 M.E.L.	

M.E. 14. Thermodynamics.—*Prerequisite:* M.E. 13 or 4N.

3 hours	P	11	MWF	217 M.E.L.

M.E. 15. Engineering Thermodynamics.—*Prerequisite:* M.E. 14.

3 hours	RS	8	MWF	215 T.B.

M.E. 15N. Mechanical Design I.—*Prerequisite:* M.E. 7N and 8N; T.A.M. 3.

3 hours	P	2–4	MWF	114 T.B.

M.E. 16N. Mechanical Design II.—*Prerequisite:* M.E. 15N.

3 hours	P	2–4	MWF	112 T.B.

[**M.E. 17. Refrigeration Engineering.**—*Prerequisite:* M.E. 14. Not given in 1945. Register in M.E. 13N.]

[**M.E. 28. Heating, Ventilating, and Air Conditioning.**—*Prerequisite:* Junior standing or consent of instructor. Not given in 1945.]

[**M.E. 31. Mechanics of Machinery.**—*Prerequisite:* Registration in T.A.M. 2. Not given in 1945. Substitute M.E. 1N and 8N for M.E. 31.]

M.E. 40. Mechanical Engineering Design.—*Prerequisite:* M.E. 31 (M.E. 1N, registration in 8N); T.A.M. 3.

3 hours	P	9–11	MWF	216 T.B.

[**M.E. 41w. Mechanical Engineering Design.**—*Prerequisite:* M.E. 40. Not given in 1945. Register in M.E. 15N.]

[**M.E. 52. Power Plant Design.**—*Prerequisite:* M.E. 65. Not given in 1945. Register in M.E. 12N.]

[**M.E. 62. Mechanical Engineering Laboratory.**—*Prerequisite:* Junior standing. Not given in 1945. Register in M.E. 1.]

M.E. 64. Mechanical Engineering Laboratory.—*Prerequisite:* Registration in M.E. 6 and 14, or 3.

3 hours	P	8–12	TT	204 M.E.L.

M.E. 65. Mechanical Engineering Laboratory.—*Prerequisite:* M.E. 64.

3 hours	P	1–5	TT	204 M.E.L.

M.E. 80N. (Navy G.E. 3). Industrial Organization.—*Prerequisite:* Third-year standing.

3 hours	P	8	MWF	1 Wood Shop
	Q	10	MWF	1 Wood Shop
	R	11	MWF	1 Wood Shop

M.E. 84. Welding Engineering.—*Prerequisite:* Senior standing in engineering; consent of instructor.

3 hours	N	2	MW	Welding Lab.
		2–5	Th	Welding Lab.

M.E. 85. Pattern and Foundry Laboratory.—*Prerequisite:* Sophomore standing; G.E.D. 1.

3 hours	PQ	8	TT	Pattern Lab.
	P	2–5	Th	Pattern Lab.
	Q	2–5	Tu	Pattern Lab.

M.E. 87. Machine Tool Laboratory.—*Prerequisite:* Sophomore standing.

3 hours	PQ	8	TT	Machine Tool Lab.
	P	2–5	Th	Machine Tool Lab.
	Q	1–4	F	Machine Tool Lab.

M.E. 88. Machine Tool Laboratory.—*Prerequisite:* M.E. 87; junior standing.

3 hours	Q	1	TT	Machine Tool Lab.
		2–5	Tu	Machine Tool Lab.

M.E. 89. (Navy M.E. 17). Heat Treatment of Metals.—*Prerequisite:* Senior standing in mechanical engineering.

3 hours	PQ	8	TT	Heat Treatment Lab.
	P	9–12	Th	Heat Treatment Lab.
	Q	9–12	Tu	Heat Treatment Lab.

MILITARY SCIENCE AND TACTICS

Courses for Undergraduates

Note: These courses are for all civilian students with two or three semesters of military training who are registering for the sixteen weeks beginning November 2, 1945.

Mil. Sci. 4a. Sophomore Drill.—

Credit	Section	Hours	Days	Room	Instructor
½ hour	C	3–5	W	Armory	
		4	F	Armory	

Mil. Sci. 4b. Sophomore Theory.—

½ hour	31	4	M	146 Armory

MINING AND METALLURGICAL ENGINEERING

MINING

Courses for Undergraduates

Min. 11. Mine Ventilation.—*Prerequisite:* Min. 2.

Credit	Section	Hours	Days	Room	Instructor
2 hours	A	10	M	319 Cer.	STEWART
		2–5	W	Min. Lab.	

Min. 24. Mining Design.—*Prerequisite:* Senior standing in mining engineering.

3 hours	A	9–12	ThS	320 Cer.	STEWART
		2–5	Th	320 Cer.	

Min. 25. Coal Preparation.—*Prerequisite:* Min. 21.

2 hours	A	2	M	319 Cer.	STEWART
		2–5	F	Min. Lab.	

Min. 61. First Aid and Mine Rescue.—*Prerequisite:* Registration in mining engineering.

1 hour		To be arranged	STEWART

METALLURGY

Courses for Undergraduates

Met. 1. Elements of Metallurgy.—Process metallurgy; principles of physical metallurgy. For students in curricula other than metallurgical engineering. *Prerequisite:* Chem. 4, 5, or 6; Physics 1b, 3b; junior standing.

3 hours	A	9	MWF	203 Met. Lab.	FORSYTH

Met. 5. Ferrous Metallurgy.—*Prerequisite:* Registration in Met. 6.

3 hours	A	11	MWF	203 Met. Lab.	FORSYTH

Met. 6. Metallurgical Calculations.—*Prerequisite:* Met. 4; Chem. 48a.

2 hours	A	11	TT	203 Met. Lab.	ECKEL

Met. 7. Ferrous Metallography.—*Prerequisite:* Met. 4; T.A.M. 3 and 63.

3 hours	A	8	MWF	203 Met. Lab.	ECKEL

Met. 8. Ferrous Metallography Laboratory.—*Prerequisite:* Registration in Met. 7.

2 hours	A	2–5	MW	209 Met. Lab.	ECKEL

Met. 9. Non-Ferrous Metallurgy.—*Prerequisite:* Met. 6; Min. 9.

3 hours	A	9	MWF	208 Met. Lab.	WALKER

Met. 13w. Utilization of Fuels.—*Prerequisite:* Chem. 22; junior standing in engineering.

2 hours	Lect. A	1	Tu	203 Met. Lab.	FORSYTH
	Lab. A	2–5	Tu	Min. Lab.	

NAVAL ORGANIZATION

Courses for Undergraduates

Naval Org. N2.—

Credit	Section	Hours	Days	Room	Instructor
1 hour	A	11	Tu	221 G.H.	

NAVAL SCIENCE

Courses for Undergraduates

N.S. 1. Seamanship and Communication.—Required of N.R.O.T.C. students having from three to six terms to complete on November 1, 1945, or seven terms on July 1, 1945.

Credit	Section	Hours	Days	Room	Instructor
3 hours	*A	11	MWF	9 G.H.	
	B	1	MWF	310 Com.	
	C	3	MWF	113 L.H.	

N.S. 2. Seamanship and Communication.—Required of N.R.O.T.C. students having five or six terms to complete on July 1, 1945. *Prerequisite:* N.S. 1.

Credit	Section	Hours	Days	Room	Instructor
3 hours	A	8	MWF	302 Arch.	
	B	9	MWF	113 Com.	
	C	10	MWF	105 L.H.	
	D	11	MWF	123 L.H.	
	E	1	MWF	219 Com.	
	F	2	MWF	123 L.H.	
	G	3	MWF	123 L.H.	
	H	4	MWF	123 L.H.	
	I	8	TTS	300 L.H.	
	J	9	TTS	105 L.H.	
	K	10	TTS	123 L.H.	
	L	11	TTS	105 L.H.	

N.S. 3. Engineering and Damage Control.—Required of N.R.O.T.C. students having from three to six terms to complete on November 1, 1945.

3 hours	A	1	MWF	3 G.H.
	B	2	MWF	313 New Agr.
	C	3	MWF	313 New Agr.

N.S. 4. Navigation and Nautical Astronomy.—Required of N.R.O.T.C. students having from three to six terms to complete on July 1, 1945.

3 hours	A	8	M	408 E.H.
		8–10	W	408 E.H.
	B	9	M	408 E.H.
		8–10	F	408 E.H.
	C	10	M	408 E.H.
		10–12	W	408 E.H.
	D	11	M	408 E.H.
		10–12	F	408 E.H.
	E	1	M	408 E.H.
		1–3	W	408 E.H.
	F	2	M	408 E.H.
		1–3	F	408 E.H.
	G	3	M	408 E.H.
		3–5	W	408 E.H.
	H	4	M	408 E.H.
		3–5	F	408 E.H.
	I	8	Tu	408 E.H.
		8–10	Th	408 E.H.
	J	9	Tu	408 E.H.
		8–10	S	408 E.H.
	K	10	Tu	408 E.H.
		10–12	Th	408 E.H.
	L	11	Tu	408 E.H.
		10–12	S	408 E.H.
	M	1	Tu	408 E.H.
		1–3	Th	408 E.H.
	N	2	Tu	408 E.H.
		3–5	Th	408 E.H.

N.S. 6. Naval Administration and Law.—Required of N.R.O.T.C. students who have already had N.S. 1, 2, and 3.

3 hours	A	8	MWF	76 Noble Hall

N.S. 8. Ordnance and Gunnery.—Required of N.R.O.T.C. students who have already had N.S. 1, 2, and 3.

3 hours	A	2	MWF	76 Noble Hall

PHYSICAL EDUCATION

Courses for Undergraduates

P.E.M. C5. Apparatus and Tumbling Stunts.—For civilian students only.

Credit	Section	Hours	Days	Room	Instructor
1 hour	B	9	MWF	100 Huff Gym.	
	C	10	MWF	100 Huff Gym.	
	I	5	MWF	302 Huff Gym.	
	K	9	TTS	75 Huff Gym.	

P.E.M. 20. Adapted Sports.—

1 hour	I	5	MWF	75 Huff Gym.

PHYSICAL TRAINING

Courses for Undergraduates

P.T. N1. (Basic).—For men who pass the Navy Third-Class swimming test.

Credit	Section	Hours	Days	Room	Instructor
2 hours	I	5	MTWTF	Old Gym. Annex	

Note: Swimming classes for students in P.T. 2 are to be arranged at the time of registration.

P.T. N2.—

2 hours	B	9	MWF	Old Gym. Annex
	C	10	MWF	Old Gym. Annex
	D	11	MWF	Old Gym. Annex
	F	2	MWF	Old Gym. Annex
	G	3	MWF	Old Gym. Annex
	H	4	MWF	Old Gym. Annex
	I	5	MWF	Old Gym. Annex

PHYSICS

Introductory Courses for Undergraduates

Physics 1a. General Physics (Mechanics, Sound, and Heat).—*Prerequisite:* Math. 2 and 4; registration in Physics 3a.

Credit	Section	Hours	Days	Room	Instructor
4 hours	Lect.	10	S	100 P.L.	
	Quiz B	9	MWF	104 P.L.	
	Quiz C	10	MWF	403 P.L.	
	Quiz D	11	MWF	403 P.L.	
	Quiz H	8	TTS	104 P.L.	
	Quiz I	9	TTS	104 P.L.	

Physics 1b. General Physics (Electricity, Magnetism, and Light).—*Prerequisite:* Physics 1a; registration in Physics 3b.

4 hours	Lect.	11	F	100 P.L.
	Quiz A	8	MWF	208 P.L.
	Quiz B	9	MWF	101 E.H.
	Quiz C	10	MWF	305 P.L.
	Quiz F	2	MWF	305 P.L.
	Quiz H	8	TTS	403 P.L.

Physics PH1. General Physics.—

4 hours	Lect.	10	S	100 P.L.
	Quiz B	9	MW(F)	104 P.L.
	Quiz C	10	MW(F)	403 P.L.
	Quiz D	11	MW(F)	403 P.L.
	Quiz H	8	TT(S)	104 P.L.
	Quiz I	9	TT(S)	104 P.L.
	Lab. G1	8–11	Th	312 P.L.
	Lab. G2	9–12	Th	406 P.L.
	Lab. H1	2–5	Th	305 P.L.
	Lab. H2	2–5	Th	312 P.L.
	Lab. I	9–12	F	312 P.L.
	Lab. J	1–4	F	312 P.L.

Physics PH2. General Physics.—

4 hours	Lect.	11	F	100 P.L.
	Quiz A	8	MW(F)	208 P.L.
	Quiz B	9	MW(F)	101 E.H.
	Quiz C	10	MW(F)	305 P.L.
	Quiz F	2	MW(F)	305 P.L.
	Quiz H	8	TT(S)	403 P.L.
	Lab. A	9–12	M	312 P.L.
	Lab. B1	1–4	M	208 P.L.
	Lab. B2	1–4	M	312 P.L.
	Lab. C	8–11	Tu	312 P.L.
	Lab. D	1–4	Tu	312 P.L.
	Lab. F	9–12	W	312 P.L.

Physics 3a. General Physics Laboratory.—*Prerequisite:* Physics 1a, or registration therein.

1 hour	Lab. G1	8–11	Th	312 P.L.
	Lab. G2	9–12	Th	406 P.L.
	Lab. H1	2–5	Th	305 P.L.
	Lab. H2	2–5	Th	312 P.L.
	Lab. I	9–12	F	312 P.L.
	Lab. J	1–4	F	312 P.L.

Physics 3b. General Physics Laboratory.—*Prerequisite:* Physics 1b, or registration therein.

Credit	Section	Hours	Days	Room	Instructor
1 hour	Lab. A	9–12	M	312 P.L.	
	Lab. B1	1–4	M	208 P.L.	
	Lab. B2	1–4	M	312 P.L.	
	Lab. C	8–11	Tu	312 P.L.	
	Lab. D	1–4	Tu	312 P.L.	
	Lab. F	9–12	W	312 P.L.	

Courses for Advanced Undergraduates and Graduates

Physics 20a. Theoretical Mechanics.—*Prerequisite:* General physics and calculus.

3 hours (or 1 unit)	Lect.	9	MWF	305 P.L.	Nye

Physics 40a. Electricity and Magnetism.—*Prerequisite:* General physics and calculus.

3 hours (or 1 unit)	Lect.	9	TT	305 P.L.	Nye
	Lab.	2–5	Tu	112 P.L.	

Physics 44. Electric and Magnetic Measurements.—*Prerequisite:* General physics and calculus.

3 hours (or 1 unit)	Lect.	1	MW	104 P.L.	Williams
	Lab.	2–4	MW	112 P.L.	

Physics 60. Heat and Thermodynamics.—*Prerequisite:* General physics and calculus.

3 hours (or 1 unit)	Lect.	8	MWF	305 P.L.	Paton

Physics 97. Thesis.—

3 hours	To be arranged	Professors in the department

Courses for Graduates

Physics 122. Dynamics.—

1 unit	Lect.	8	MTT	202 P.L.	Dancoff

Physics 146a. Electrodynamics.—

1 unit	Lect.	10	MWT	202 P.L.	Dancoff

Physics 181a. Quantum Mechanics.—

1 unit	Lect.	10	TuFS	202 P.L.	Goldhaber

Physics 183a. Nuclear Physics.—

1 unit	Lect.	11	TTS	202 P.L.	Goldhaber

Physics 190. Research.—

1 unit	To be arranged	Professors in the department

Physics 198. Seminar.—

1 to 2 units*	To be arranged	Professors in the department

Physics 199. Physics Colloquium.—

No credit		4:45	Th	119 P.L.	Goldhaber

PSYCHOLOGY

Courses for Undergraduates

Psych. PS1. Psychology.—

Credit	Section	Hours	Days	Room	Instructor
3 hours	A	1	MWF	327 G.H.	Harrell
	B	10	TTS	317 G.H.	Harrell

SPANISH

Spanish 1a. Elementary Spanish.—For students who have no credit in Spanish. No credit toward graduation is given for Spanish 1a without Spanish 1b.

Credit	Section	Hours	Days	Room	Instructor
4 hours[1]	E	1	MTWT	151 Armory	

[1]Seniors will receive only 3 hours credit.

*In registering for a course with variable credit, as 1 to 2 units or 2 to 4 hours, each student puts on his study-list the number of units or hours for which he intends to take the course.

SPEECH

Courses for Undergraduates

Speech 1. Principles of Effective Speaking.—

Credit	Section	Hours	Days	Room	Instructor
3 hours[1]	A	1	MWF	119 Com.	
	B	10	TTS	223 Com.	
	C	11	TTS	222 Com.	

[1]Seniors receive only 2 hours credit.

THEORETICAL AND APPLIED MECHANICS

Courses for Undergraduates

T.A.M. 1. Analytical Mechanics (Statics).—*Prerequisite:* Registration in integral calculus.

Credit	Section	Hours	Days	Room	Instructor
2 hours	E	11	TT	310 T.L.	
	K	9	TT	202 E.H.	
	Y	11	TT	202 E.H.	
	A	1	TT	310 T.L.	
	P	1	TT	202 E.H.	

T.A.M. 2. Analytical Mechanics (Dynamics).—*Prerequisite:* T.A.M. 1 or concurrent registration therein.

3 hours	B	8	MWF	202 E.H.
	C	9	MWF	202 E.H.
	K	9	MWF	302c T.L.
	P	9	MWF	310 T.L.
	E	10	MWF	202 E.H.
	D	1	MWF	202 E.H.
	Z	2	MWF	202 E.H.

T.A.M. 3. Resistance of Materials.—*Prerequisite:* T.A.M. 1.

3 hours	B	8	MWF	310 T.L.
	E	8	MWF	305 T.L.
	K	8	MWF	313 T.L.
	C	9	MWF	305 T.L.
	A	11	MWF	305 T.L.
	P	11	MWF	313 T.L.
	D	1	MWF	302c T.L.
	Q	1	MWF	305 T.L.
	Z	2	MWF	305 T.L.

T.A.M. 4. Hydraulics.—*Prerequisite:* T.A.M. 1; registration in T.A.M. 2.

2 hours	F	10	TT	302c T.L.
	K	11	TT	302c T.L.
	P	11	TT	305 T.L.

T.A.M. 5. Mechanics of Fluids.—For mechanical engineering and aeronautical engineering students only. *Prerequisite:* T.A.M. 2.

3 hours	W	10	MWF	302c T.L.

T.A.M. 63. Resistance of Materials Laboratory.—*Prerequisite:* Registration in T.A.M. 3.

1 hour	E	3–5	M	223 T.L.
	Z	10–12	Tu	223 T.L.
	D	1–3	Tu	223 T.L.
	K	3–5	Tu	223 T.L.
	F	3–5	W	223 T.L.
	J	8–10	Th	223 T.L.
	W	1–3	Th	223 T.L.
	P	3–5	Th	223 T.L.
	A	1–3	F	223 T.L.

T.A.M. 64. Hydraulics Laboratory.—*Prerequisite:* Registration in T.A.M. 4.

1 hour	P	2–5	Tu	Hyd. Lab., T.L.
	E	2–5	W	Hyd. Lab., T.L.
	K	2–5	Th	Hyd. Lab., T.L.

T.A.M. 97. Thesis.—*Prerequisite:* Senior standing; approval of head of department.

1 to 3 hours*	To be arranged	Members of department

Courses for Advanced Undergraduates and Graduates

T.A.M. 49. Advanced Dynamics and Vibration.—*Prerequisite:* T.A.M. 2 and 3.

3 hours (or ½ to 1 unit)*	To be arranged

*In registering for a course with variable credit, as 1 to 2 units or 2 to 4 hours, each student puts on his study-list the number of units or hours for which he intends to take the course.

Courses for Graduates

T.A.M. 107. Laboratory Investigation in Strength of Materials.—(1 to 2 units).* Twice a week. Arrange.

T.A.M. 108. Laboratory Investigation in Hydraulics.—(1 to 2 units).* Twice a week. Arrange. Associate Professor LANSFORD.

T.A.M. 109. Laboratory Investigation in Plain and Reinforced Concrete.—(1 to 2 units).* Twice a week. Arrange. Professor RICHART.

T.A.M. 111. Analytical Study of Experimental Work on Reinforced Concrete.—Columns and slabs. (1 unit). Twice a week. Arrange. Professor RICHART.

T.A.M. 112. Structural Mechanics.—(1 unit). Three times a week. Arrange. Professor SCHWALBE.

T.A.M. 114. Theory of Elasticity with Applications to Engineering Problems.—(1 unit). Three times a week. Arrange. Professor NEWMARK.

T.A.M. 198. Thesis.—(1 to 2 units).* Arrange. Members of department.

*In registering for a course with variable credit, as 1 to 2 units or 2 to 4 hours, each student puts on his study-list the number of units or hours for which he intends to take the course.