

- (4) Design practice on universal  
Constructions (Head work, Dump,  
siphon, etc.)
- (5) Making the trainees realize to be  
agriculture engineers.

(2) Organization of curriculum

- (1) Elementary class 3 types 147 hr. (23%)  
Mathematics, statistics, hydraulics,  
Electricity, etc.
- (2) Basic Class, 8 types, 147 hr, (23%)  
Water supply, structure mechanics,  
Geology, etc.
- (3) Practical Class, 2 types, 282 hr, (43%)  
Main facilities mechanics, design  
practice.
- (4) Others , 74 hr, (11 %) agriculture  
administration, technical theory,  
law, etc.

(3) Level of the Curriculum

- (1) In case of elementary and basic class  
trainees are expected to master the  
subjects of the curriculum to acquire  
pretty high level knowledges (general  
culture course of university)
- (2) In case of practical class, trainees  
are expected to acquire the technical  
knowledges up to about the level of  
"Agriculture Engineering Hand Book"  
and so on.

(3) In case of design practice class, trainees study structure calculation, making design documents etc. and trainees can experience the series of design technics.

(4) In case of other's class, trainees can study how to share the duties on a project among the staff .

6. Texts

Elementary and basic

class.....Text book on the

market and sub texts.

Practical class....."Agriculture Engineering Hand Book", Design Criteria, texts of new technics.

Design practice class....Design criteria, Design process guide book

Other class.....We make texts if necessary.

7. Lessons

(1) Lesson hours

9.30 - 10.40

10.50 - 12.10

13.10 - 14.40

14.50 - 16.10

(2) Lesson method

A lesson method depends on an instructor's discretion. Generally, lessons consists of using texts and if necessary we can supplement the texts by Agriculture Engineering Hand Book, Design criteria

etc. And sometimes we use slide,  
picture etc.

8. Instructor (1) Elementary and basic class

In case of a subject which takes much  
time, we ask an outsider to be a  
instructor of the subject.

(2) Practical Class

In case of technical knowledge lessons,  
as a general rule, researchers and training  
instructors of the Institute of Agriculture  
Engineering are to be instructors.

(3) Design practice class

In case of design practice, generally,  
instructors are from private consultant  
companies.

(4) Others

In case of other subjects, instructors  
are from the head office, other offices  
etc.

CONTENTS OF GENERAL ENGINEERING TRAINING COURSE

SUBJECT	I N S T R U C T O R		T E X T S		CONTENTS
	POSITION	NAME	MARKETING	TEXT	
Mathematics (96)	Tokuba University	Mr. Itoh	Basic of differential and integral calculus Alignment algebraic Statistics		Differential calculus, Differential calculus of elemental function, Theorem of mean value, Theorem of Taylor, Partial differential, indefinite integral, Definite Integral, Definite integral in a broad sense, Differential equation, Numerical analysis Alignment space, Procession etc. Alignment space, Procession etc. Probability, Probability variable, Probability distribution Inference of population parameter, Inspection of a hypothesis.
Hydraulics (42)		Mr. Toyoda	Elemental Hydraulics Practice of Hydraulics	0	Movement of water, Orifice, Gate, Flow in pipeline, Flow in open Canal, Experiment and practice by a model
Structure Mechanics (42)	Tokyo Agriculture & Engineering college	Mr. Aoyama	Structure mechanics Hydraulics		Force and moment, Plan figure, Nature and strength of materials, various of beams, Truss, Rahmen.
Reinforcement Concrete Mechanics (30)	"	Mr. Shiralaki	Reinforcement Concrete	0	Nature of reinforcement concrete, Pole, Bending, Beam, Rahmen, Arch etc.
Soil Mechanics (24)	Ibaragi University	Mr. Sudoh	Soil Mechanics		Classification of Soil, Moisture in soil, Consistency limit, Consolidation, shearing strength of Soil, Pressure, Permeability of soil, Course base and subgrade etc.

CONTENTS OF GENERAL ENGINEERING TRAINING COURSE

SUBJECT	I N S T R U C T O R		P O S I T I O N		MARKETING	T E X T S	CONTENTS
	POSITION	NAME	MARKETING	T E X T S			
Coast Hydraulics (6)	Institute of Agricultural Engineering		Agricultural Engineering Hand Book	0		Sea phenomenon (tide, Wind, Wave), Ondulation (wave Mechanics) Coast Mechanics (Coastal current, Drift sand etc,) Quality of water etc.	
Agricultural hydrology (16)	"	Mr. Shibuya	Agricultural hydrology			Rainfall precipitation, DAD analysis, Water balance, Runoff, Rate of flow, Water level of river, River basin, etc.	
Drainage Planning (6)	Institute of	Mr. Toyoda	Agricultural Engineering Hand Book Design criteria " Drainage"	0		First conception of a plan, Research, Storm drainage and ordinary drainage, Gravitational drainage and pumping drainage, Inside and Outside water level, Land utility, Drainage facilities, Numerical simulation etc.	
Field Irrigation (6)	"	Mr. Imata	"	0		Irrigation planning, Research of the present condition Irrigation requirement and source of water, Repeating irrigation, Maintenance of facilities, etc.	
Dry field Irrigation (12)	"	Mr. Kawano Mr. Kosuge	Agricultural Engineering Hand Book Design criteria "Dry field Irrigation "	0		Irrigation planning, research of the present condition, Irrigation requirement and source of water, Farm facilities (sprinkler, surface irrigation ) etc.	
Water resource Development. (3)	Head Office	Mr. Teyogi	Agriculture Engineering Hand Book	0		Water utilization and agriculture, water in the present condition and in future, water resource development, Arrangement of water supply, River law, River conference etc.	

CONTENTS OF GENERAL ENGINEERING TRAINING COURSE

SUBJECT	I N S T R U C T O R		T E X T S		CONTENTS
	POSITION	NAME	MARKETING	TEXT	
Dam (15)	Institute of Agricultural Engineering	Mr. Yasuda	" Design criteria " Dam "	0	Elemental conditions for plan and design. Concrete dam, Fill dam, Spill way, Intake, Maintenance of dam etc.
Head Work (12)	"	Mr. Ishino	Design of Head Work		General and elemental items, Hydraulic and elemental design, Stability and structure calculation, Maintenance bridge, Construction planning etc.
Ground Water Mechanics (12)	"	Mr. Kimura		0	Hydraulics geology, Groundwater hydraulics, Isotop hydrology, Quality of groundwater, Utility of terrestrial heat etc.
Open Canal (12)	Institute of Agricultural Engineering	Mr. Honma	Agriculture Engineering Hand Book Design criteria " Canal (1) "	0	Classification and organization of water canal, Process of water canal construction, Sort of open canal, Elemental items for design, Siphon, Diversion, Regulating facilities, Drop Structure, Chute Works, Spill way, Floodway
Pipeline (6)	"	Mr. Ogiwara	Agricultural Hand Book Design criteria " Canal (2) "	0	Elemental items for design, Pipeline (Hydraulic and Structure design), Side facilities (diversion, Air facilities etc.) Construction (Foundation, Lay of Pipe- line etc.)
Pump Station (12)	Head Office	Mr. Nagao	Agriculture Engineering Hand Book Design Criteria "Pump Station "	0	Sort and feature of pump, Motor, Design of pump station Operation facilities, Construction, Maintenance etc.

CONTENTS OF GENERAL ENGINEERING TRAINING COURSE

SUBJECT	I N S T R U C T O R		T E X T S		CONTENTS
	POSITION	NAME	MARKETING	TENT	
Gate (9)	Head Office	Mr. Hasegawa		0	Sort and feature of gate, Important points of intake and discharge facilities of dam in designing, central, Inspection, Maintenance etc.
Water Control facilities (3)	"	Mr. Okuyama	Agricultural Engineering Hand Book	0	Equipments (measure, Transmission, Record, Display, Information process, Remote control, Automatic control etc.
Electricity (9)	"	Mr. Nagao	Electricity facilities design technical manual		Electricity facilities, Electric work, Inspection Law Procedure etc.
Tunnel (6)	"	Mr. Tokuda	Agriculture Engineering Hand Book Design Criteria "Water Canal (3)	0	Survey, Hydraulic design, structure design. Pressure tunnel etc.
Farm road (6)	Head Office	Mr. Ino	Farm road Design criteria "Farm Road "	0	Structure, Pavement, Supplement facilities, Maintenance Bridge, Railway etc.
Land Consolidation (9)	Institute of Agricultural Engineering	Mr. Ogiwara	Agriculture Engineering Hand Book Design Criteria "Land Consolidation"	0	Preserving farm condition, Underdrainage, Soil Layer Improvement, Maintenance, Replotting etc.

CONTENTS OF GENERAL ENGINEERING TRAINING COURSE

SUBJECT	I N S T R U C T O R		T E X T S		CONTENTS
	POSITION	NAME	MARKETING	TEXT	
Land Reclamation (9)	Institute of Agricultural Engineering	Mr. Saloh	Agricultural Engineering Hand Book Design criteria "Land Reclamation" "Farm Land Conservation"	0	Survey, Land reclamation, Disaster prevention, Farm arrangement, Design, Construction, Farm Land conservation
Construction machinery (3)	Head Office	Mr. Isogaya	Agriculture Engineering Hand Book	0	Construction machinery (Land reclamation, Land consolidation, Road, Concrete, Asphalt etc)
Operation Control (6)	Institute of Agricultural Engineering	Mr. Honma	Engineering Works Operation control Standard manual	0	Construction control, Operation control, PERT, Network, Practice of network, Quality control, Inspection, etc.
Geology (15)	"	Mr. Nakayama Mr. Takeuchi	Agriculture Engineering Hand Book	0	Topography, Geology, Topographic map and Geology map, Rock mechanics, Geology research, Field investigation survey, etc.
Applied Geology (6)	Head Office	Mr. Kudoh		0	Applied geology of constructions, Tectonic map of Japan archipelago, Geological circulation from rock to soil.



CONTENTS OF GENERAL ENGINEERING TRAINING COURSE

SUBJECT	I N S T R U C T O R		T E X T S		CONTENTS
	POSITION	NAME	MARKETING	TENT	
Rural Planning (6)	Institute of Agricultural Engineering	Mr. Imai		0	Conception of rural planning, Rural communities and agricultural engineering, Process of rural planning, Planning and improvement (Road, water supply and drainage, living environment) etc.
Soil physics (3)	Institute of Agricultural Engineering	Mr. Iwata		0	Physical aspect of soil (Organization and structure, Soil water, Soil Temperature) etc.
Soil chemistry (3)	Fruit tree Research station	Mr. Satoh		0	Chemical aspect of soil (mineral Soil, Clay, Corrosion and microorganism), soil improvement etc.
Crop (3)	Agricultural Research center	Mr. Yoshida		0	Feature of crops and self-support rate, Condition for crop (weather, Soil), Effect of irrigation, Fertilizer, Woods, Injury of planting consecutively, Vermin, Agricultural chemicals etc.
Concrete (12)	Institute of Agricultural Engineering		Agriculture Engineering Hand book	0	Material (Cement, Aggregate, Water, Admixture, Steel), Concrete (Hardening concrete, Proportion, construction Mixed concrete) etc.
Blasting (3)	Taisei Construction Inc.	Mr. Itano		0	Gunpowder (Classification, Usage, Handling, Fuse, Train of powder), Blasting experiment, Law, Blasting mechanics.
Asphalt (12)	Shell Oil Inc	Mr. Ohta	Design Criteria "Asphalt for water utilization" "Farm Road pavement"	0	Classification, characteristics, Aggregate, Proportion, Admixture experiment, consolidation, Admixture temperature, compaction, Destroy of asphalt admixture etc.

CONTENTS OF GENERAL ENGINEERING TRAINING COURSE

SUBJECT	I N S T R U C T O R		T E A C H E R S		CONTENTS
	POSITION	NAME	MARKETING	TEXT	
(practice of design) River Structure (3)	Head Office	Mr. Kamada		0	River law, River administration facilities, Master plan etc.
Head Work (30)	JIRCO		Design of head work Design criteria "Head Work"	0	Master design (conclude main factors by hydraulic calculation) Final design (Structure calculation, Reinforcement calculation, Foundation, Drawing) Evaluation.
Drainage pump Station (30)	Taiyo Consultant Inc.	Mr. Iwai	Design criteria "Drainage" "Pump Station"	0	Equal to above
Siphon (30)	Institute of Agricultural Engineering	Mr. Honma	Design criteria "Channel(1)" "Channel (2)"	0	Equal to above
Special lecture (2)	Director of the Institute of Agricultural Engineering				
Agricultural Engineers (3)	Kanto Regional Administration Office	Mr. Murayama			Agricultural engineering (history, Duty, Feature), Obligations of agricultural engineers.

CONTENTS OF GENERAL ENGINEERING TRAINING COURSE

SUBJECT	I N S T R U C T O R		T E X T S		CONTENTS
	POSITION	NAME	MARKETING	TEXT	
Tendency of agricultural administration	Institute of Agricultural Engineering	Mr. Oglwara,		0	Movement of agricultural administration, Improvement ground works for agricultural productivity (Purpose, Law system, Budget, Sort, Present condition, Long-range plan of the land improvement project)
Structure of land improvement project and technical system	Head office	Mr. Ooi		0	Law system, Structure of the project, Procedure of budget execution, Rationalization of duties, Over sea's technical cooperation, Organization of the M A F F

Timetable of General Engineering Training Course

昭和59年度第2回 農業土木一般技術研修カリキュラム

昭和59年度第2回		10		11		12		1		2		3	
月	日	年	後	年	後	年	後	年	後	年	後	年	後
1	1	日	水	水	文	文	文	文	文	文	文	文	文
2	2	金	木	木	水	水	水	水	水	水	水	水	水
3	3	土	金	金	木	木	木	木	木	木	木	木	木
4	4	土	土	土	金	金	金	金	金	金	金	金	金
5	5	日	土	土	土	土	土	土	土	土	土	土	土
6	6	月	日	日	日	日	日	日	日	日	日	日	日
7	7	月	月	月	月	月	月	月	月	月	月	月	月
8	8	月	月	月	月	月	月	月	月	月	月	月	月
9	9	月	月	月	月	月	月	月	月	月	月	月	月
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23	23	月	月	月	月	月	月	月	月	月	月	月	月
24	24	月	月	月	月	月	月	月	月	月	月	月	月
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28	28	月	月	月	月	月	月	月	月	月	月	月	月
29	29	月	月	月	月	月	月	月	月	月	月	月	月
30	30	月	月	月	月	月	月	月	月	月	月	月	月
31	31	月	月	月	月	月	月	月	月	月	月	月	月

(注) 技術研修  
 農業土木一般技術研修  
 土木機械工学  
 水利施設工学  
 河川工作物  
 水田かんがい  
 水質調査  
 水質汚濁防止  
 土木改良計画の仕組みと体系  
 土壌、物、化  
 物理性、化学性  
 測定法  
 設計実習  
 (エン)

昭和59年7月23日 修正

Table - 7 Standard curriculum of management for technical training  
( Basic Level )

Date		Subject	Contents
1st	a.m.	Elementary knowledge of Construction Control	Meaning, necessity, dignity of a contract
	p.m.	Concrete & Soil Engineerings	General matters of concrete and soil materials
2nd	a.m.	Practise of Soil Test	Specific gravity of soil, consistency limit test, mechanical analysis
	p.m.	"	
3rd	a.m.	"	Consolidation test, compaction test, unconfined compression test
	p.m.	"	
4th	a.m.	Practise of Concrete Test	Fine & course aggregate test, mix design of concrete, slump test, entrapped air test, collecting test pieces
	p.m.	"	
5th	a.m.	"	Compressive strength test, making estimating formula of compressive strength from W/C
	p.m.	"	
6th	a.m.	Making a Report	Evaluation of this training

Table - 8 Standard curriculum of management for technical training  
( Intermediate Level )

Date		Subject	Contents
1st	a.m.	Introduction of construction control	Meaning, necessity, dignity of a contract
	p.m.	Safety control	Points of safety control in the field
2nd	a.m.	Temporary Works	Planning and cost estimation of temporary works
	p.m.	Operation control	Methods of operation control by PERT*)
3rd	a.m.	"	"
	p.m.	"	Practise of PERT
4th	a.m.	Quality control	Methods of quality control by statistics
	p.m.	"	"
5th	a.m.	Pavement of Farm Road (Design)	Design of pavement of farm roads
	p.m.	Pavement of Farm Road (Construction)	Construction of pavement of farm roads
6th	a.m.	Introduction of Planning	Survey and planning for land improvement projects

\*) PERT = Program Evaluation and Review Technique

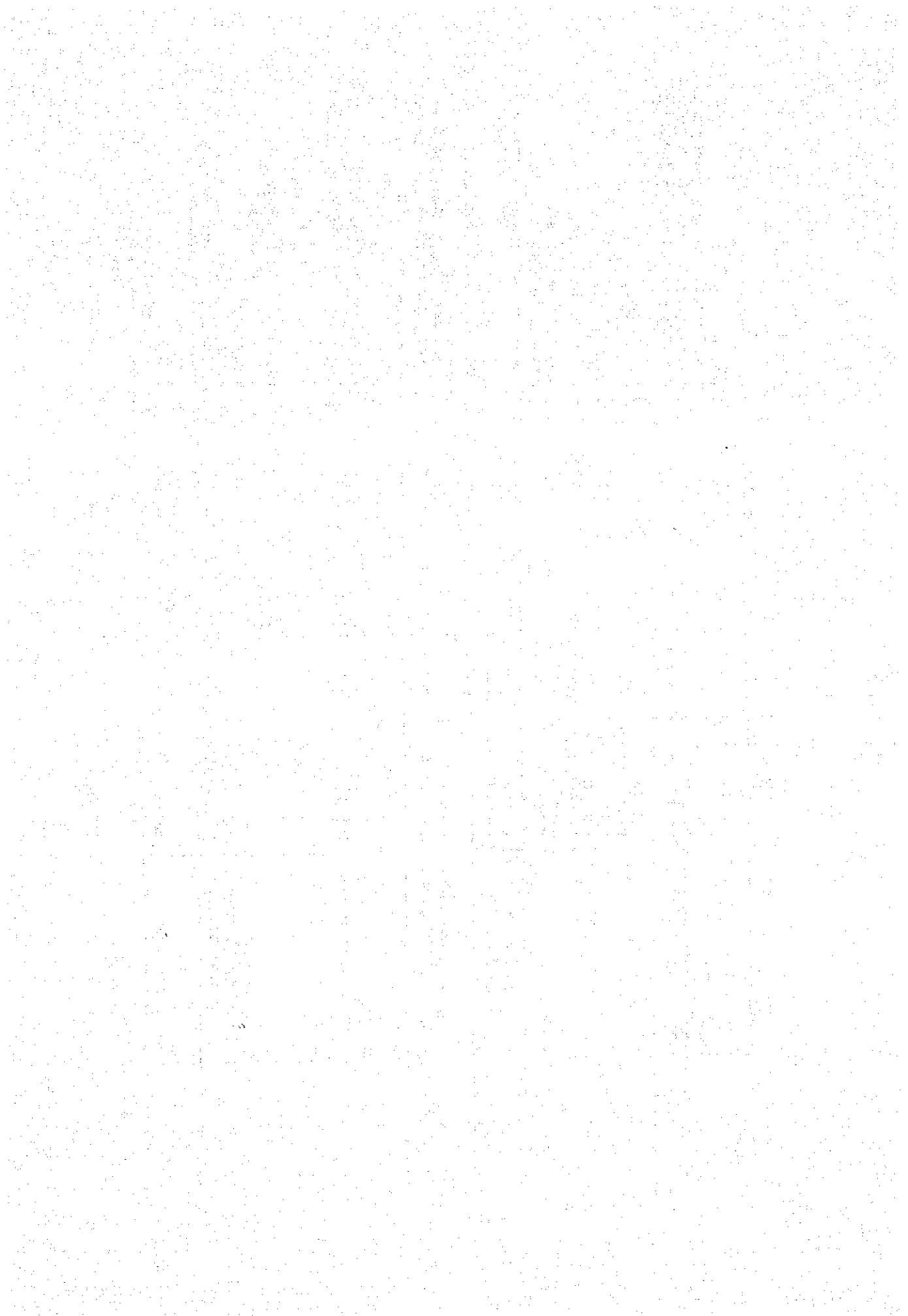
Table 9 Contents of management for technical training (advanced level)

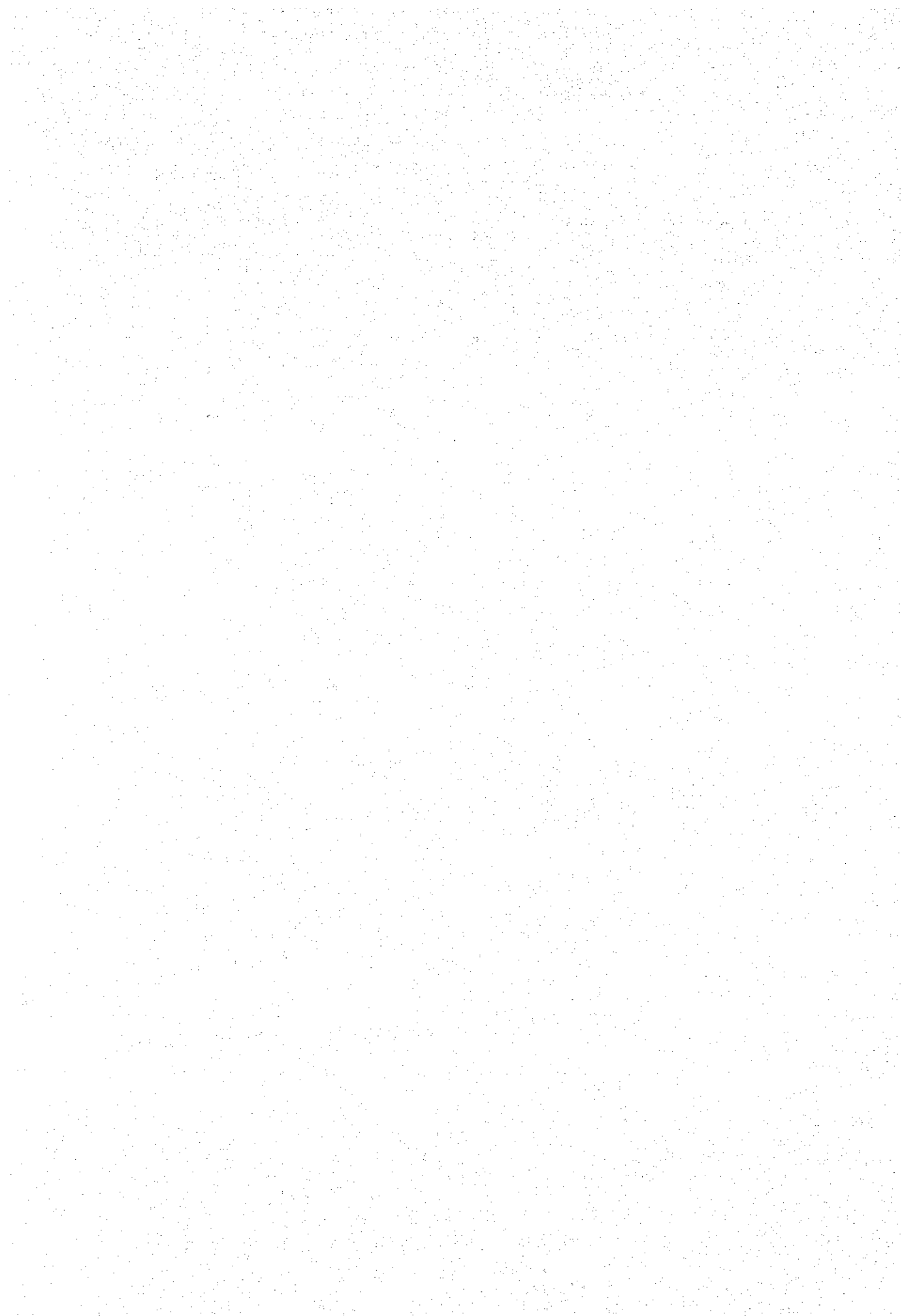
Date	Week	Subjects	Occupation	Lecturer	Text Books		Contents
					Selling	By Lecturer	
6.19	Tuesday	Special lecture (2)	Tai-Sei Kensetsu	Eiichi Goto		○	Existing condition and task of material quality, construction and operation control
6.20	Wed	Quality control by using statistic (6)	Kashima Doro	Yasuji Saito	Quality Control for paved road (Kashima Shuppen)		Statistical and concrete method for quality control
6.21	Thu	Quality control management method (3)	"	"	"		"
6.22	Fri	" (6)	"	"	"		Objective and examination of quality control and concrete management method of inspection result
6.23	Sat	Construction management method (3)	Kanto Regional Agricultural Administration Office (Technical Service Center for Agricultural Land Improvement)	Masami Nomura	Standardization of Civil Engineering Construction Management (Agricultural Structure Improvement Bureau)		Basic composition of Construction management and method and standardization of contract
6.24	Sun	Holiday					
6.25	Mon	Operation Planning and Management (3)	Liaison Office	Honma	Basic Operation Control	○	Method of operation control and concrete method of part theory

Date	Week	Subjects	Occupation	Lecturer	Text Books by Lecturer	Contents
6 . 25	Mon	Civil Engineering Works and operation control (3)	Design Division	Sugahara	Basic operation control (Agricltural Structure Improvement Buresu )	Purpose and process of operation control, contract and operation control, Duty of owner and contractor during construction period, and and regulation
6 . 26	Tue	Asphalt Testing and operation control	Shell	Ota	Design Creteixia (Asp works for Canal	Quality and Management of Materia. Test and Inspection Method
6 . 27	Wed	Soil Test and Construction Management	Structure Division	Kawaguchi		Quality and Management of Materials, Test and Inspection Method
6 . 28	Thu	Concrete Test and Operation Management	Structure division	Evina		ditto
6 . 29	Fri	Discussion	Agricultural Structure Improvement Bureau Structure Department Liaison Office	Tamura Kawaguchi Evina		Program and Technical tasks on Operation Management
6 . 29	Fri	Agricultural Civil Engineering Construction System	Design Division	Tamura		Existing condition and Tasks of Design Cost Estimation, Construction Supervision and Inspection System









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