

訓練目標設定

DEPARTMENT	DIVISION
Heavy Shop	DIE Casting

MODULE (SUB-MODULE)	訓練対象	訓練目標	時間					備考
			基礎学科	専門学科	実技	その他	1H=90分	
H3-1 Die Casting Technique	CIASTが行う入所 試験合格者	基本的なダイキャストマシンの操作および メンテナンスが出来る。	H (45)	H (45) 23 (51)	H (45) 20 (44)	H (45) 2 (5)	1H=90分	
H3-2 Advanced Die Casting Technique	H3-1修了者	ダイキャストマシンのより高度なメンテナ ンスが出来、製品の欠陥分析が出来る。	30	15 (50)	13 (43)	2 (7)	同上	

訓練目標設定

DEPARTMENT	DIVISION
Heavy Shop	INVESTMENT Casting

MODULE (SUB-MODULE)	訓練対象	訓練目標	総時間				備考
			基礎学科 H (%)	専門学科 H (%)	実技 H (%)	その他 H (%)	
H4-1 Investment Casting Technique	CIASTが行う入所 試験合格者	インベストメント鋳造の基礎的な理論がわかり、実際に製品を作ることができる。	75	15 (20)	58 (77)	2 (3)	1H=90分
H4-2 Advanced Investment Casting Technique	H4-1修了生	インベストメント鋳造品の欠陥分析ができ、且、金型の基本的な理論と製造ができる。	45	10 (22)	33 (73)	2 (5)	同上
H4-3 Traditional Lost wax Technique	CIASTが行う入所 試験合格者	ロストワックスの欠陥分析ができ、ロストワックスのデザインの改正ができる。	30	10 (33)	18 (60)	2 (7)	同上

訓練目標設定

DEPARTMENT	DIVISION
Heavy Shop	Plastics Moulding Technique

MODULE (SUB-MODULE)	訓練対象	訓練目標	総時間					備考
			基礎学科	専門学科	実技	その他		
H 6 Plastics Moulding Technique (プラスチック成形) (H 6.1) Plastics Moulding Machine (プラスチック成形機) (H 6.2) Plastics Materials (プラスチック材料) (H 6.3) Plastics Moulding Process (injection type) プラスチック成形法 (射出成形) (H 6.4) Plastics Mould Design (injection type) プラスチック成形用金型 (射出成形用金型)の構造 (H 6.5) Plastics Secondary Process 二次加工法	(1)受講資格 C I A S Tの行入り 所試験に合格した者 (2)年令制限 とくになし	プラスチック成形とくに射出成形に関する 技能訓練指導員として必要な基本的技能と 知識を与えらるとともに、技能の向上変化へ の適応性を養うことを目標とする。	H (9)	H (9) 76 (50)	H (9) 76 (50)	H (9) 76 (50)	H (9)	(1H=90分授業) MALAYSIAN Plastic Manufacturers Association (マレーシア国プラスチック成 形工業会)に所属するMoulder が276社有り、自動車の国産化、 家電用プラスチックの国内供給 体制の確立を急がれており、こ のためプラスチック成形技術の 向上訓練(公共施設)が切望さ れている。

訓練目標設定

DEPARTMENT		DIVISION	
電気	電子	電	気

MODULE (SUB-MODULE)	訓練対象	訓練目標	総時間	専門学科				備考
				基礎	実	技	その他	
EE1A・1 Contract Circuit Relay Maintenance and Repair (有接点)	職業訓練指導員, 監督者及び技能労働者	工業用機械の有接点制御盤の製作, メンテナンス, 修理が短期間で, しかも高度にできる。	57	H (40)	H (40) 17 (30)	H (40) 40 (70)	H (40)	(1H=50分授業)
EE1A・2 Non-Arcing Circuit Relay Maintenance and Repair (無接点)	"	工業用機械の無接点制御盤の製作, メンテナンス, 修理が短期間で, しかも高度にできる。	57		17 (30)	40 (70)		
EE1B・1 Industrial Wiring Construction (室内配線)	"	室内配線工事が短期間で, しかも高度にできる。	57		11 (20)	46 (80)		
EE1B・2 Distribution Panel Work (高圧受電盤)	"	高圧受電盤(500kw)配線工事が短期間で, しかも高度にできる	38		8 (20)	30 (80)		LLN(マレインシア電力会社)の協力により, 訓練への期待大。
EE2・1 Motor Trouble Analysis and Repair (モーター)	"	A.C.モーターの故障発見およびその修理が短期間で, しかも高度にできる。	57		11 (20)	47 (80)		
EE2・2 Transformer Trouble Analysis and Repair (トランス)	"	トランス(10 KVAまで)の故障発見およびその修理が短期間で, しかも高度にできる。	38		8 (20)	30 (80)		
EE3・1 Motor-Generator Control Testing (モーター発電機)	"	モーターと発電機の同時運転と各種コントロールが高度にできる。	57		17 (30)	40 (70)		
EE3・2 Motor Automatic Control (モーター制御)	"	モーターの自動制御が高度にできる	38		11 (30)	27 (70)		自動制御用機器の負荷コントロールとして, ニーズの見込大。

訓練目標設定

DEPARTMENT	DIVISION
Electric/Electronic	Electronic

MODULE (SUB-MODULE)	訓練対象	訓練目標	総時間				備考
			基礎学科	専門学科	実技	その他	
EE4 Advanced radio Service and repair	1. Instructor 2. In-Plant trainer 3. Electronicsの基礎を習得している者	Radio systemの解析と計測器の基本操作が出来る事を目標とする。	H 145 (5W)	H (例) 29 (20)	H (例) 116 (80)	H (例)	(1H=50分授業)
EE5 Advanced TV service and repair	1. 同上 2. 同上 3. 同上	TV systemの解析と計測器の基本操作が出来る事を目標とする。	H 145 (5W)	H (例) 43.5 (30)	H (例) 101.5 (70)		
EE6 Inter-Office communication equipment service and repair	1. 同上 2. 同上 3. 同上	屋内通信設備の保守管理及び、system 解析と計測器の基本操作が出来る事を目標とする。	H 145 (5W)	H (例) 29 (20)	H (例) 116 (80)		
EE7A Electric/Electronic office equipment service and repair, Computer software	1. 同上 2. 同上 3. 同上	Softwareに関し、その概念を理解し、 Programming toolの基本操作と、職種に応じた活用糸口を見い出す事が出来る事を目標とする。	H 232	H (例) 46.4 (20)	H (例) 185.6 (80)		
EE7B Electric/Electronic office equipment service and repair, Computer hardware	1. 同上 2. 同上 3. 同上	1) Hardwareに関し、system解析と基本計測器の操作が出来る事。 2) Interfaceに関し、基本概念の理解が出来る事。	H 203	H (例) 40.6 (20)	H (例) 182.4 (80)		

S Y L L A B U S C H A R T

指導技法訓練	.....	130
監督技法訓練	.....	141
上級技能訓練		
自動車	.....	149
機械・金型	.....	165
板金・プレス	.....	183
重工業	.....	190
電気・電子	.....	211

C I A S T

SYLLABUS

- TM2 Basic Training Methodology for Instructor
- TM4 Written Instructional Materials
- TM5 Audio-Visual Aids

SYLLABUS CHART

Total Hours (57)

Module Title : TM2 Basic Training Methodology for Instructor 19H x 3W=57H

Block	Unit	Hours
1. Introduction to the course	a) Objectives of the module. b) Conduct of the module. c) Course outline and schedule. d) Certification.	
2. Background	a) History, system and policy of vocational training. b) The on the job instructor <ol style="list-style-type: none"> 1 Role; 2 Professional qualification; 3 Personal attributes; 4 Responsibilities. 	
3. How to conduct training	a) The demonstration <ol style="list-style-type: none"> 1 Definition of demonstration; 2 Features of the demonstration; 3 Procedures for preparation and presentation. b) The four step pattern of instruction. <ol style="list-style-type: none"> 1 Preparation; 2 Presentation; 3 Application; 4 Test. c) How to demonstrate. <ol style="list-style-type: none"> 1 Sample demonstration; 2 Selection of teachable components of the skill by the group. 	

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Module Title : TM2 Basic Training Methodology for Instructor

Block	Unit	Hours
	<p>d) The instructional content of a job skill.</p> <ol style="list-style-type: none"> 1 Analysis of a typical job skill by the group; 2 Selection of teachable components of the skill by the group; 3 Arrangement of component in logical instructional sequence by the group; 4 Analysis, selection and arrangement by individual participants. <p>e) Preparation for demonstration I</p> <ol style="list-style-type: none"> 1 Reason for a plan; 2 Format for the demonstration plan; 3 Preparation of a demonstration plan by the group; 4 Participants' individual preparation of demonstration plans. <p>f) Demonstration practice I</p> <ol style="list-style-type: none"> 1 Division of class into three groups; 2 Participants' individual preparations of first 30 - min demonstrations; 3 Group critiques of demonstration:- <ol style="list-style-type: none"> (i) Titles; (ii) Instructional objectives; (iii) Application of four-step pattern of instruction. 	

SYLLABUS CHART

Module Title : TM2 Basic Training Methodology for Instructor

Block	Unit	Hours
	<p>g) Determining training needs.</p> <ol style="list-style-type: none"> 1 Output and quality of experience workers; 2 Output and quality of new workers; 3 Actual needs to meet own work requirement; 4 Skill level code; 5 Cumulative level of skill deficiencies. <p>h) How people learn.</p> <ol style="list-style-type: none"> 1 Actions by which people learn; 2 Learning through the senses. <p>i) Individual differences.</p> <ol style="list-style-type: none"> 1 Individual differences and learning; 2 Human factors causing; individual differences; 3 Implications for instructing. <p>j) The five laws of learning.</p> <ol style="list-style-type: none"> 1 Law of readiness; 2 Law of effect; 3 Law of exercise; 4 Law of primacy; 5 Law of intensity. <p>k) The shop talk</p> <ol style="list-style-type: none"> 1 Definition of shop talk; 2 Characteristics; 3 Procedures for preparation and presentation. 	

SYLLABUS CHART

Module Title : TM2 Basic Training Methodology for Instructor

Block	Unit	Hours
	<p>1) How to give a shop talk.</p> <p style="padding-left: 20px;">1 Sample shop talk;</p> <p style="padding-left: 20px;">2 Class evaluation of sample shop talk.</p> <p>m) Preparation for shop talk.</p> <p style="padding-left: 20px;">1 Format for a shop talk;</p> <p style="padding-left: 20px;">2 Preparation of a shop talk by the group;</p> <p style="padding-left: 20px;">3 Participants' individual preparation of shop talks.</p> <p>n) Achievement motivation</p> <p style="padding-left: 20px;">1 Definition of motivation;</p> <p style="padding-left: 20px;">2 Common motivation drives;</p> <p style="padding-left: 20px;">3 Methods for motivating learners.</p> <p>o) Shop talk practice</p> <p style="padding-left: 20px;">1 Division of class into three groups;</p> <p style="padding-left: 20px;">2 Participants' individual preparation of 7 - 10 minute shop talks;</p> <p style="padding-left: 20px;">3 Group critiques of shop talks:-</p> <p style="padding-left: 40px;">(i) Titles;</p> <p style="padding-left: 40px;">(ii) Instructional aims;</p> <p style="padding-left: 40px;">(iii) Application of procedures.</p> <p>p) The instructors' personal tools of communication.</p> <p style="padding-left: 20px;">1 Personal appearance;</p> <p style="padding-left: 20px;">2 Speech;</p> <p style="padding-left: 20px;">3 Personality;</p> <p style="padding-left: 20px;">4 Personal conduct.</p>	

SYLLABUS CHART

Module Title : TM2 Basic Training Methodology for Instruction

Block	Unit	Hours
	<p>g) Questioning techniques</p> <ol style="list-style-type: none"> 1 Questions and answers as aid to communication; 2 Methods for framing and asking; 3 Questions; 4 Methods for handling responses. <p>r) Primary audio visual aids.</p> <ol style="list-style-type: none"> 1 Multi-sensory aids; 2 Fundamentals of using:- <ol style="list-style-type: none"> (i) Chalkboard; (ii) Actual objects, cutaway and models; (iii) Charts, posters, flannel boards etc. <p>s) Preparation for demonstration II.</p> <ol style="list-style-type: none"> 1 Participants' individual preparation of demonstrate plans. <p>t) Job attitude</p> <ol style="list-style-type: none"> 1 Definition; 2 Emotional differences in trainees; 3 Discipline; 4 Complimenting and correcting trainees. 	

SYLLABUS CHART

Module Title : TM2 Basic Training Methodology for Instruction

Block	Unit	Hours
	<p>u) Demonstration practice II</p> <ol style="list-style-type: none"> 1 Division of class into three groups; 2 Participants' individual presentation of second 30-minute demonstrations. 3 Group critiques of demonstrations for:- <ol style="list-style-type: none"> (i) Titles; (ii) Instructional aims; (iii) Application of procedure and instructional techniques. <p>v) Safety</p> <ol style="list-style-type: none"> 1 As integral parts of lessons; 2 Methods of teaching safety. <p>w) The work sheet</p> <ol style="list-style-type: none"> 1 Uses; 2 Format; 3 Preparation. <p>x) Preparation for demonstration III</p> <ol style="list-style-type: none"> 1 Participants' individual preparation of demonstration plans. <p>y) Objective evaluation of skill performance</p> <ol style="list-style-type: none"> 1 Skill performance tests; 2 Rating scalex. 	

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Module Title : TM2 Basic Training Methodology for Instruction

Block	Unit	Hours
	<p>z) Demonstration practice III</p> <ol style="list-style-type: none"> 1 Division of class into three groups; 2 Participants' individual presentation of third 30-minute demonstrations. 3 Group critiques of demonstrations for:- <ol style="list-style-type: none"> (i) Titles; (ii) Instructional aims; (iii) Application of procedures and instructional techniques. <p>za) Administrative duty of instructors</p> <ol style="list-style-type: none"> 1 Management of training responses; 2 Record keeping. 	
4. Closing	<p>a) Test</p> <p>b) Evaluation of programme and closing.</p>	

SYLLABUS CHART

Module Title : TM4 Written Instructional Materials (2 weeks)

Block	Unit	Hours
1. Introduction	a) Planning for instruction,	1
	b) Reasons for writing instructional materials.	
	c) Classifications of written instructional materials.	1
	c) Reasons for using standard formats.	
2. The lesson plan	a) Definition	2
	b) Reasons for one lesson plan format,	
	c) Format	
	d) Description of content.	2
	e) Procedure for writing.	4
	f) To produce lesson plan.	5
3. Instruction sheets as aids to instruction	a) Definition	1
	b) Advantages of using instruction sheets.	
	c) Content of instruction sheets.	1
	d) Order of arrangement of instruction sheets.	
4. The information sheet	a) Definition	1
	b) Content	1
	c) Format	1
	d) Description of content.	1
	e) Procedure for writing.	4
	f) To produce an information sheet.	5

SYLLABUS CHART

Module Title : TM4 Written Instructional Materials (2 weeks)

Block	Unit	Hours
5. The assignment sheet	a) Definition b) Content c) Format d) Description of content. e) Procedure for writing. f) To produce an assignment sheet.	1 1 1 1 4 4
6. The work sheet	a) Definition b) Content c) Format d) Description of content. e) Procedure for writing. f) To produce a work sheet.	1 1 1 1 4 5

SYLLABUS CHART

Module Title : TM-5 Audio-Visual Aids (2 weeks)

Block	Unit	Hours
1. Visual aids	a) Introduction to training aids.	1
	b) Some aids to chalkboard work.	1
	c) Pictures and graphic aids.	1
	d) To make charts and diagrams.	4
	e) Models in regard to visual aids.	1
	f) To make models and mock-up.	6
	g) Three-dimensional teaching aids.	2
2. Overhead projector	a) Transparencies.	1
	b) Teaching with transparencies.	1
	c) Production procedures of transparency.	2
	d) Operating OHP and to make all kinds of transparency.	14
3. Movie and video	a) Motion picture-films and video.	2
	b) Operating film-projector.	2
4. Slides	a) Slides.	2
	b) Production procedures of slides.	5
	c) To make slides.	10

SYLLABUS

- ST1 Method and Work Study
- ST2 Quality Control
- ST6 Leadership and Human Relation

SYLLABUS CHART

Module Title : STIA Method and Work Study (58H)

Block	Unit	Hours
1. Role of actual spot and IE activities	a) Role of actual spot for efficiency elevation. b) Role and attitude of supervisor. c) Forms of IE activities, promotion system and attitude in an actual spot.	(2)
2. What is IE activities?	a) Objectives and role of manufacturing. b) What is IE activities, meaning of IE activities. c) What is efficiency? How to measure efficiency. d) For elevating efficiency. e) Necessity of IE activities, its background.	(4)
3. An outline of IE method	a) What is IE method? b) System of IE method. c) Attitude for practical use of IE method.	(4)
4. Process analysis	a) What is process analysis? b) What is product-process analysis? c) How to do product-process analysis. d) How to see the result of product-process analysis. e) How to see product-process analysis.	(5)

SYLLABUS CHART

Module Title : STIA Method and Work Study (58H)

Block	Unit	Hours
5. Motion analysis	a) What is motion analysis? b) What is both hand job analysis? c) How to do both hand job analysis. d) How to see the result of both hand job analysis. e) How house both hand job analysis. f) Therblig symbols. g) How to see and use the result of Therblig analysis. h) What is memo motion-analysis.	(5)
6. Principles of motion economy	a) What is principles of motion economy? b) How to see and use each principle: Basic Principle I c) Basic Principle II d) Basic Principle III e) Basic Principle IV f) How to apply principles of economy motion.	(8)
7. Time study	a) What is time study? b) How to the time study. c) How to see the result of time study. d) How to use time study. e) Time study of non-repeated job. f) Time study by filter.	(5)

SYLLABUS CHART

Module Title : STIA Method and Work Study (58H)

Block	Unit	Hours
8. Establishment of standard time	a) What is time study? (Construction, meaning, use) b) What is rating? c) What is allowance? d) How to decide standard time.	(5)
9. PTS (Predetermine Time Standard) methods	a) What is PTS method? b) How to do PTS method.	(5)
10. Work sampling	a) What is work sampling? b) How to do work sampling. c) How to see the result of work sampling.	(7)
11. Analysis of line balance	a) What is line balance? b) What is analysis of line balance? c) Pitch diagram. d) Calculation of line balance. e) Principle for improvement of line balance. f) How to analyze line balance.	(5)

SYLLABUS CHART

Module Title : ST2A Quality Control (58H)

Block	Unit	Hours
1. Opening		
2. Fundamental concept of quality control	1. What is quality? 2. What is control? 3. What is quality control?	(4)
3. QC circle activities	1. What is QC circle? 2. Introduction of QC circle. 3. Management of QC circle.	(6)
4. How to collect and arrange data	1. How to collect and arrange data. 2. Graphs. 3. Cause-effect diagrams. 4. Check sheets. 5. Parts diagrams. 6. Stratification. 7. Scatter diagrams. 8. Histograms. 9. How to express the position centre of distribution. 10. Population and sample. 11. Distribution of data. 12. Control charts.	(31)

SYLLABUS CHART

Module Title : ST2A Quality Control (58H)

Block	Unit	Hours
5. Improvement in workshop	<ol style="list-style-type: none">1. What is the improvement in workshop?2. How to find out the problems and how to decide theme.3. How to analyze for solving the problems.4. Examination and conduct of resultant of improvement.	(10)
6. Case studies on QC methods	<ol style="list-style-type: none">1. Example of reduction of defect in manufacturing process.2. Example of improvement and control of manufacturing process.	(5)

SYLLABUS CHART

Module Title : ST6 Leadership and Human Relation (2 weeks)

Block	Unit	Hours
1. Strategy for job relations (2H)	a) Job relations aims to develop a skill.	
	b) Summary of purpose and emphasis of Job Relations Sessions.	2
2. Presentation of foundations for good relations and 4-step method (18H)	a) Presentation of Session I.	2
	b) Method of getting acquainted.	
	c) Discuss the supervisor's five needs.	
	d) Describe supervisor's problems as regards Job Relations.	1
	e) Show that a supervisor meets his responsibilities through relationships with people.	4
	f) Present foundations for good relations.	2
	g) Develop the "Individual" chart.	3
	h) Define a "Proplem".	
	i) Introduce T.W.I. method.	2
	j) Hand out cards, summarize 4-step method.	
	k) Discuss how problems come up.	1
	l) Consider supervisor's problems on the job.	1
m) Review through Session I.	2	
3. Importance of getting the facts (11H)	a) Presentation of Session II.	1
	b) Develop ability in using the method by presenting and discussing the Tom problem.	3
	c) Remember we said that opinions and feelings.	2
	d) Supervisors' problems.	3
	e) Review through Session II.	2

SYLLABUS CHART

Module Title : ST6 Leadership and Human Relation (2 weeks)

Block	Unit	Hours
4. Weighing and deciding (9H)	a) Presentation of Session III.	1
	b) Review 4-step method.	1
	c) Present the shipyard problem.	2
	d) Supervisors' problems.	3
	e) Review through Session III.	2
5. Taking preventive action and checking results (8H)	a) Presentation of Session IV.	1
	b) Practice on steps 3 and 4.	1
	c) Discuss effect of change.	1
	d) Supervisors' problems.	3
	e) Review through Session IV.	2
6. A supervisor's other work relationships (9H)	a) Presentation of Session V.	1
	b) Supervisors' problems.	3
	c) Review of Job Relations Card.	2
	d) Discuss supervisor's other relationships.	1
	e) Create conviction.	
	f) Review through Session V.	2

MODULE LIST OF CIAST TRAINING

DEPARTMENT: Automotive

NUMBER	MODULE TITLE	DURATION (weeks)	NUMBER	SUBMODULE TITLE	DURATION (weeks)
A1	Petrol/Diesel Engine Service	8	A1.1	Specialized Engine Service	3
			A1.2	Fuel Injection System Service	2
			A1.3	Engine Electrical and Electronic Equipment Service	3
A2	Trouble Analysis	6	A2.1	Engine Trouble Analysis	3
			A2.2	Chassis Trouble Analysis	3
A3	Performance Test	5	A3.1	Engine Performance Test	3
			A3.2	Chassis Performance Test	2
A4	Vehicle Chassis Repair	5	A4.1	Specialized Chassis Repair	3
			A4.2	Body Electrical Equipment Service	2
A5	Vehicle Body Repair	8	A5.1	Vehicle Body Parts Repair	3
			A5.2	Vehicle Frame Repair	2
			A5.3	Vehicle Body Parts Painting	3
A6	Vehicle Inspection	4	A6.1	Vehicle Regular Checking	2
			A6.2	Vehicle Inspection	2

SYLLABUS CHART

Module Title : A1.1 Specialized Engine Service (3 weeks)

Block	Unit	Hours
1. Engine perfect overhauling	a) Engine checking.	7
	b) Engine disassembling.	6
	c) Parts inspection and reconditioning.	8
	d) Engine assembling and adjusting.	4
	e) Engine performance testing.	10
2. Engine accessory service	a) Lubrication system.	4
	b) Cooling system.	4
	c) Fuel system.	10
3. New technology	a) New engines.	2
	b) New engine accessory.	2

SYLLABUS CHART

Module Title : Al.2 Fuel Injection System Service (2 weeks)

Block	Unit	Hours
1. In-line pump service	a) PE-A type pump body overhauling. b) Fuel feed pump overhauling. c) Governor service. d) Automatic timer service. e) Injection nozzle service.	10 2 4 2 2
2. Distributor pump service	a) VE type pump overhauling.	10
3. Injection pump test stand	a) Operation of test stand. b) Testing and adjusting.	4 4

SYLLABUS CHART

Module Title : A1.3 Engine Electrical and Electronic Equipment Service (3 weeks)

Block	Unit	Hours
1. Starting system	a) Conventional type starter motor overhauling.	8
	b) Reduction type starter motor overhauling.	8
2. Charging system	a) Alternator overhauling.	8
	b) AC regulator checking and testing.	4
	c) Alternator with IC regulator testing.	2
3. Ignition system	a) Contact-point ignition distributor service.	6
	b) Pointless ignition distributor service.	4
	c) Ignition coil and condenser testing.	2
4. Other equipment	a) Electrical cooling fan service.	2
	b) Electrical fuel feed pump service.	2
	c) Pre-heating system service.	2
5. Rewiring service	a) Starting system.	3
	b) Charging system.	3
	c) Ignition system.	3

SYLLABUS CHART

Module Title : A2.1 Engine Trouble Analysis (3 weeks)

Block	Unit	Hours
1. Petrol engine trouble analysis	a) Trouble shooting. b) Engine mechanism diagnosing. c) Engine ignition system diagnosing. d) Exhaust gas analysis. e) Engine diagnosing at high speed running.	10 5 6 4 5
2. Diesel engine trouble analysis	a) Trouble shooting. b) Exhaust gas analysis. c) Engine diagnosing at high speed running.	10 4 5
3. Engine electrical equipment trouble analysis	a) Charging system. b) Starting system.	4 4

SYLLABUS CHART

Module Title : A2.2 Chassis Trouble Analysis (3 weeks)

Block	Unit	Hours
1. Power-train trouble analysis	a) Clutch.	4
	b) Manual transmission.	4
	c) Automatic transmission.	10
	d) Drive-line and universal joint.	3
	e) Differential and drive-axle.	4
2. Brake system trouble analysis.	a) Brake system.	6
	b) Power brake system.	4
3. Steering and suspension trouble analysis	a) Steering and suspension.	4
	b) Power-steering.	6
	c) Tire and wheel.	4
4. Airconditioner analysis and service	a) Analysis.	2
	b) Gas charging.	4
	b) Testing.	2

SYLLABUS CHART

Module Title : A3.1 Engine Performance Test (3 weeks)

Block	Unit	Hours
1. Preface or summary	a) Measuring equipments and apparatus.	4
	b) Engine dynamometer.	6
	c) Measurement of main engine performance.	4
2. Engine load test	a) Preparation.	10
	b) Measuring facts.	2
	c) Testing.	20
3. Data processing	a) Calculating.	5
	b) Engine characteristic curve.	6

SYLLABUS CHART

Module Title : A3.2 Vehicle Performance Test (2 weeks)

Block	Unit	Hours
1. Power performance test	a) Running resistance.	8
	b) Power performance.	8
	c). Bench test.	10
2. Braking performance test	a) Braking performance.	8
	b) Bench test.	4

SYLLABUS CHART

Module Title : A4.1 Specialized Chassis Service (3 weeks)

Block	Unit	Hours
1. Power-train system service	a) Automatic transmission service.	15
	b) Differential gear service.	4
2. Brake system service	a) Power brake system service	8
3. Steering and suspension system service	a) Air-suspension service.	4
	b) Power-steering service.	10
	c) Front-wheel alignment service.	8
	d) Tire-wheel service.	8

SYLLABUS CHART

Module Title : A4.2 Body Electrical Equipment Service (2 weeks)

Block	Unit	Hours
1. Lighting and preservation equipment service	a) Head light service.	4
	b) Turn signal and four way flasher service.	8
	c) Window wiper service.	4
	d) Horn service.	4
	e) Central alarm system service.	8
2. Meters and gauges service	a) Speed-meter service.	2
	b) Fuel meter, water-thermometer and oil pressure gauge service.	8

SYLLABUS CHART

Module Title : A5.1 Vehicle Body Parts Repair (3 weeks)

Block	Unit	Hours
1. Damage diagnosis	a) How to distinguish the damage.	1
	b) Determination of operation process.	1
2. Correction of the damaged panel	a) Correcting with hand tool.	8
	b) Correcting by shrinkage.	4
	c) Correcting with pulling tool.	4
	d) Finishing with hand tool.	3
3. Re-placement of the panel	a) Replacing panel and patching.	8
	b) How to replace each panel.	14
	c) Replacing window shield.	8
4. Filling dents with solder and plastic body filler	a) Filling solder.	3
	b) Body filler.	3

SYLLABUS CHART

Module Title : A5.2 Vehicle Frame Repair (2 weeks)

Block	Unit	Hours
1. Damage diagnosis	a) Damage range and how to distinguish them.	1
	b) Inspection and adjustment of frame and body fitting.	4
2. Body jack	a) How to use of porto-power.	2
3. Frame straightner	a) Determination of repair process.	1
	b) Korek frame straightener.	6
4. Body aligning	a) Aligning on damaged front body.	8
	b) Aligning on damaged side body.	8
	c) Aligning on damaged rear body.	8

SYLLABUS CHART

Module Title : A5.3 Vehicle Body Parts Painting (3 weeks)

Block	Unit	Hours
1. Automotive painting	a) Automotive painting and paints.	1
	b) Requirement on painting shop.	1
2. Refinishing technique	a) Sanding and compound.	4
	b) Masking.	2
	c) Spray gun.	4
	d) Paint drying.	1
	e) Thinner.	1
3. Refinishing operation process.	a) Preparation procedure of refinishing.	2
	b) Paint surface adjustment operation process.	3
	c) Undercoats operation process.	10
	d) Matching colors.	4
	e) Metallics.	8
	f) Topcoats operation process.	16

SYLLABUS CHART

Module Title : A6.1 Vehicle Periodical Inspection and Service (2 weeks)

Block	Unit	Hours
1. Outline	a) Outline of inspection system.	2
	b) Contents of inspection.	5
2. Preparation for inspection	a) Necessary tools and testers.	2
	b) Vehicle reception checking.	2
	c) Washing the vehicle.	2
3. Inspection and service	a) Inside of engine room.	4
	b) Around body.	4
	c) Inside of vehicle.	4
	d) Lower side of vehicle.	10
4. Reporting	a) Reporting form.	1
	b) How to make a report.	2

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Module Title : A6.2 Vehicle Inspection (2 weeks)

Block	Unit	Hours
1. Outline	A. Outline of inspection equipments.	2
	B. Contents of inspection.	4
2. Operation of inspection equipments	A. Brake tester and load meter	2
	B. Speed meter tester and sound level meter.	2
	C. Test lift.	2
	D. Side slip tester and wheel alignment indicator.	2
	E. Head light tester.	2
	F. Exhaust gas analyzer and diesel smoke meter.	2
3. Inspection of vehicle	A. Testing the braking power.	2
	B. Checking the speed-meter.	1
	C. Measuring the noise.	1
	D. Inspection of body under carriage.	4
	E. Measuring the front wheel alignment.	2
	F. Checking the head light.	2
	G. Analysis of exhaust gas.	2
4. Reporting	A. How to make the inspection report.	2

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Module Title : A6.2 Vehicle Inspection (2 weeks)

Block	Unit	Hours
5. Maintenance of inspection equipments	A. Brake tester. B. Chassis dynamometer C. Test lift. D. Side slip tester. E. Head light tester. F. Exhaust gas analyzer and diesel smoke meter.	1 1 1 1 1 1

MODULE LIST OF CIAST TRAINING

DEPARTMENT: Machine Operation and Die Making

NUMBER	MODULE TITLE	DURATION (weeks)	NUMBER	SUBMODULE TITLE	DURATION (weeks)
MD1A	Shearing Die Making	8			
MD1B	Drawing Die Making	8			
MD1C	Plastic Mould Making	8			
MD1D	Die Casting Mould Making	8			
MD1E	Forging Die Making	8			
MD1F	Rubber Die Making	8			
MD1G	Die Design	8			
MD2	Tool Making, Jig Boring and Repair	6			
MD3	Finishing/Fitting				
			MD3.1	Surface, Cylindrical and Centerless Grinding	2
			MD3.2	Form and Optical Projection Profile Grinding	2
			MD3.3	Tool and Cutter Grinding	2

MODULE LIST OF CIAST TRAINING

DEPARTMENT: Machine Operation and Die Making

NUMBER	MODULE TITLE	DURATION (weeks)	NUMBER	SUBMODULE TITLE	DURATION (weeks)
MD4A	NC Machining		MD4A.1	NC Turning	3
			MD4A.2	NC Milling	3
			MD4B.1	NC Wire Cutting	2
			MD4B.2	NC Electric Discharge Machining	2
			MD4B.3	Automatic Copy Milling	2

SYLLABUS CHART

Module Title : MD1A Shearing Die

Block	Unit	Hours
1. Introduction	a) Outline of press work. b) Shearing die. c) Bending die. d) Progressive die. e) Materials.	
2. Related drawing	a) Reading and drawing of the die project.	
3. Fabrication of the die project	a) Fabrication of the elements by using the general purpose machines and the specialized machines. b) Hand finishing.	
4. Heattreatment	a) Heattreatment of the elements. b) Measurement.	
5. Assembling	a) Assembling the die project.	
6. Handling the die	a) Setting the die to the press machine. b) Trial and repair.	
7. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD1B Drawing Die

Block	Unit	Hours
1. Introduction	a) Outline of the draw die. b) Materials.	
2. Related Drawing	a) Reading and drawing of the die project.	
3. Fabrication of the die project	a) Fabrication of the elements by using the general purpose machines and specialized machines. b) Hand finishing.	
4. Heattreatment	a) Heattreatment of the elements. b) Measurement.	
5. Assembling	a) Assembling the die project.	
6. Handling the die	a) Setting the die to the press machine. b) Trial and repair.	
7. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD1C Plastic Die

Block	Unit	Hours
1. Introduction	a) Outline of the plastic die. b) Material.	
2. Related drawing	a) Reading and drawing the die project.	
3. Fabrication of the die project	a) Fabrication of elements by using the general purpose machines and the specialized machines. b) Hand finishing.	
4. Assembling	a) Assembling the die project.	
5. Handling the die	a) Setting the die to the injection machine. b) Trial and repair.	
6. Safety	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD1D Die Casting

Block	Unit	Hours
1. Introduction	a) Outline of the casting die. b) Materials.	
2. Related drawing	a) Reading and drawing of the die project.	
3. Fabrication of the die project	a) Fabrication of the elements by using the general purpose machines and the specialized machines. b) Hand finishing.	
4. Heattreatment	a) Heattreatment of the elements. b) Measurement.	
5. Assembling	a) Assembling the die project.	
6. Handling the die	a) Setting the die to the the die casting machine. b) Trial and repair.	
7. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MDIE Forging Die

Block	Unit	Hours
1. Introduction	a) Outline of the forging die. b) Materials.	
2. Related drawing	a) Reading and drawing of the die project.	
3. Fabrication of the die project	a) Fabrication of the elements by using the general purpose machines and the specialized machines. b) Hand finishing.	
4. Heattreatment	a) Heattreatment of the elements. b) Measurement.	
5. Assembling	a) Assembling the die project.	
6. Handling	a) Setting the die to the forging machine. b) Trial and repair.	
7. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD1F Rubber Die

Block	Unit	Hours
1. Introduction	a) Outline of the rubber die. b) Materials.	
2. Related drawing	a) Reading and drawing of the die project.	
3. Fabrication of the die project	a) Fabrication of the elements by using the general purpose machines and the specialized machines. b) Hand finishing.	
4 Heattreatment	a) Heattreatment of the elements. b) Measurement.	
5. Assembling	a) Assembling the die project.	
6. Handling the die	a) Setting the die to the injection machine. b) Trial and repair.	
7. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD1G Die Design

Block	Unit	Hours
いくつかのDie Makingのコース	を実施した後検討する。	

SYLLABUS CHART

Module Title : MD2 Tools, Jigs and Fixtures Making

Block	Unit	Hours
1. Introduction	a) Outline of tools, jigs and fixtures. b) Materials.	
2. Related drawing	a) Reading and drawing of tools, jigs and fixtures.	
3. Fabrication of tools, jigs and fixtures	a) Fabricate of the projects. b) Hand finishing.	
4. Heattreatment	a) Heattreatment of the projects.	
5. Grinding	a) Grinding the projects. b) Measurement.	
6. Assembling and test	a) Assembling the projects. b) Trial and repair.	
7. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD3.1 Surface, Cylindrical and Centreless Grinding

Block	Unit	Hours
1. Introduction	a) Outline of the grinding machines, parts and their functions. b) Accessories and uses.	
2. Grinding condition	a) Feature of grinding and selection of grinding wheel. b) Grinding fluids.	
3. Grinding	a) Preparation of the work pieces. b) Operation of the grinding machine. c) Grinding work pieces. d) Measurement.	
4. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD3.2 Form and Optical Projection Profile Grinding

Block	Unit	Hours
1. Introduction	a) Outline of machines, parts and their functions. b) Accessories and uses.	
2. Grinding condition	a) Feature of grinding and selection of grinding wheel. b) Grinding fluids.	
3. Grinding	a) Preparation of the work pieces. b) Operation guidance. c) Grinding work pieces. d) Measurement.	
4. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD3.3 Tool and Cutter Grinding

Block	Unit	Hours
1. Introduction	a) Outline of the universal tool grinder and the tungsten carbide bit grinder, parts and their functions. b) Accessories and uses.	
2. Grinding condition	a) Feature of grinding and selection of grinding wheel. b) Grinding fluids.	
3. Grinding	a) Operation of the grinding machines. b) Grinding. c) Measurement.	
4. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD4A.1 NC Turning

Block	Unit	Hours
1. Introduction	a) Outline of NC lathe, parts and their functions. b) Accessories and uses.	
2. Programming	a) Programming. b) Punching tape.	
3. Machining	a) Operation guidance. b) Machining. c) Measurement.	
4. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD4A.2 NC Milling

Block	Unit	Hours
1. Introduction of NC milling	a) Outline of NC milling machine, parts and their functions. b) Accessories and uses.	
2. Programming	a) Programming. b) Punching.	
3. Machining	a) Operation guidance. b) Machining. c) Measurement.	
4. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD4B.1 NC Wire Cut

Block	Unit	Hours
1. Introduction	a) Outline of NC wire cut parts and their functions. b) Accessories and uses.	
2. Programming	a) Programming.	
3. Machining	a) Operation guidance. b) Machining. c) Measurement.	
4. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD4B.2 NC Electrical Discharge Machine

Block	Unit	Hours
1. Introduction	a) Outline of EDM, parts and their function. b) Accessories and uses.	
2. Programming	a) Programming.	
3. Preparation of electrode	a) Designing electrode. b) Machining electrode.	
4. Machining	a) Operation guidance. b) Machining. c) Measurement.	
5. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS CHART

Module Title : MD4B.3 Automatic Copy Milling Machine

Block	Unit	Hours
1. Introduction	a) Outline of automatic copy milling machine, parts and their functions. b) Accessories and uses.	
2. Preparation of patterns	a) Outline of patterns. b) Preparation of patterns.	
3. Programming	a) Programming.	
4. Machining	a) Operation guidance. b) Machining. c) Measurement.	
5. Safety and maintenance	a) Safety precaution. b) Maintenance.	

SYLLABUS

F1-1 CO₂ ARC Welding

SYLLABUS CHART

Module Title : F-1-1 CO₂ Arc Welding (3 weeks (60H))

Block	Unit	Hours
1. Interpretation and uses of working drawing	A. Working to detail drawing. B. Layout sketches or templates as required.	
2. Assemble and operate CO ₂ welding equipments	A. Principle of CO ₂ welding. B. Functions of various parts and equipments.	
3. Set up and operate CO ₂ welding machine	A. Set-up, operate and maintain CO ₂ welding machine. B. Set-up and maintain CO ₂ welding equipments.	
4. Weld on flat position	A. Striking the arc and adjusting the CO ₂ welding machine. B. Prepare and perform arc on steel plate.	
5. Weld in horizontal-vertical and vertical position	A. Weld varying thickness up to 12 mm in horizontal-vertical position. B. Weld varying thickness up to 12 mm in vertical position.	
6. Weld steel pipe in the rotated flat position	A. Make butt welds in the rotated flat position on ϕ 50 to 150 mm steel pipes. B. Weld slip-on flanges to pipes in the horizontal-vertical position.	
7. Testing of welds	A. Test completed work-pieces.	

SYLLABUS

- F3-1 Bending Work
- F3-2 Shearing Work
- F3-3 Drawing Work
- F3-4 Inspection and Maintenance

SYLLABUS CHART

Module Title : F3-1 Bending Works 2Ws. (40)

Block	Unit	Hours
1. General knowledge	i. Classification and characteristic of Press work	1
	ii. Classification, structure and Characteristic of Press machine.	
	iii. Basic structure and characteristic of Press die.	1
	iv. Classification, characteristic and workability of Press work material	1
2. Bending with Press brake	i. Handling of Press brake	4
	ii. Mounting of die.	4
	iii. Bending the work piece	4
3. Steel cabinet making	i. Explain to procedure of production	6
	ii. Cutting with shearing machine	2
	iii. Piercing with crank press.	2
	iv. Bending with press brake	8
	v. Framing with resistance welding.	4

SYLLABUS CHART

Module Title : F3-2 Shearing Work 1w (20)

Block	Unit	Hours
1. General knowledge of Press work	i. Classification and characteristic of Press work.	1
	ii. Classification, structure and characteristic of Press machine.	1
	iii. Basic structure and characteristic of Press die.	1
	iv. Classification characteristic and workability of Press work material.	1
2. Shearing with 'C' type frame press.	i. Operating of 'C' type frame press.	4
	ii. Mounting of die:- Blanking die. Compound blanking and piercing die.	4
	iii. Make products with progressive die.	8

SYLLABUS CHART

Module Title : F3-3 Drawing Work (20)

Block	Unit	Hours
1. General knowledge	i. Classification and characteristic of Press work.	1
	ii. Classification structure and characteristic of Press machine	1
	iii. Basic structure and characteristic of Press die.	1
	iv. Classification characteristic and workability of Press work material.	1
2. Operation of 'C' type frame press Hydraulic Press.	i. Operating of 'C' type frame press.	4
	ii. Operating of 'C' type frame press.	4
3 Mounting of drawing die.	i. Mounting of drawing die.	8

SYLLABUS CHART

Module Title : F3-4 Inspection and Maintenance of Press Work Machine (20)

Block	Unit	Hours
1. Introduction of inspection and maintenance	i. Establish to safety inspection system	2
2. Structure of press machine	i. Mechanical press. ii. Hydraulic press iii. Safety press.	3 1
3. Explanation of inspection and maintenance guide	i. Mechanical press. ii. Hydraulic press. iii. Safety press.	4 2 2
4. Way to inspection	i. Inspection work procedure and check list.	6

SYLLABUS CHART

Module : Heat Treatment [H₁A]

Heat Treatment Process (H₁A-1) 3 weeks

Advanced Heat Treatment (H₁A-2) 3 weeks

Module : Forging [H₁B]

Forging Process (H₁B-1) 3 weeks

Testing on Forging Products (H₁B-2) 2 weeks

SYLLABUS CHART

Module Title : Heattreatment Process (3 weeks)

Block	Unit	Hours
1. Maintain various types of furnace for heating materials	a) kinds of furnace used and their essential features b) Safety operation and precautions c) Maintenance	
2. Set and operate furnace to the required temperature for various heating process.	a) Procedure of operating and lighting. 1) Oil furnace 2) Gas furnace 3) Electric furnace b) Select temperature according to material. c) Rectify and maintain temperature during heating. d) Uses of temperature equipment.	
3. Prepare and carry-out annealing process	a) Set furnace temperature b) Precaution to be observed during annealing operation. c) Check product and test 1) Hardness 2) Micro structure	
4. Prepare and carry-out normalizing process	a) Set furnace temperature b) Precaution to be observed during normalizing operation c) Check product and test 1) Hardness 2) Micro structure	

SYLLABUS CHART

Module Title : _____

Block	Unit	Hours
5. Prepare and carry-out Hardening process	a) Set furnace temperature b) Precaution to be observed during Hardening operation c) Check product and test 1) Hardness	
6. Prepare and carry-out Tempering process	a) Set furnace temperature b) Precaution to be observed during tempering operation c) Check product and test 1) Hardness 2) Micro-structure	
7. Prepare and carry-out carburizing process	a) Set furnace temperature b) Precaution to be observed during carburizing operation c) Check product and test 1) Hardness 2) Micro-structure.	
8. Prepare and carry-out stress Relieving process.	a) Set furnace temperature b) Precaution to be observed during stress-relieving operation c) Check product and test 1) Hardness 2) Micro-structure	

SYLLABUS CHART

Module Title : _____

Block	Unit	Hours
9. Prepare and carry-out spheroidizing process	a) Set furnace temperature b) Precaution to be observed during spheroidizing operation. c) Check product and test 1) Hardness 2) Micro-structure	
10. Prepare and carry-out case-hardening process.	a) Set furnace temperature b) Precaution to be observed during case-hardening operation c) Check product and test 1) Hardness 2) Micro-structure	
11. Prepare and carry-out flame-hardening process.	a) Set furnace temperature b) Precaution to be observed during flame-hardening operation c) Check product and test 1) Hardness 2) Micro-structure.	
12. Maintain various types of testing equipments	a) Kinds of hardness test equipments:- 1) Rock well hardness 2) Brinell hardness 3) Impact test machine 4) Stretch test machine b) Micro-structure testing machine c) Maintenance	

SYLLABUS CHART

Module Title : Advanced Heat Treatment (3 weeks)

Block	Unit	Hours
1. Unicase Gas Atmosphere furnace for heating process	A. Method of selecting temperature for heating B. Essential features and operations C. Safety operations and precautions D. Maintenance	
2. Cleaner	A. Safety operation and precautions B. Maintenance	
3. Closed Atmosphere flowing type temperature furnace	A. Set, select temperature for heating and essential features B. Safety operations and precautions C. Maintenance	
4. Salt bath furnace	A. Set, select temperature for heating and essential features. B. Safety operation and precautions. C. Maintenance	
5. High frequency electric furnace	A. Set, select temperature for heating and essential features B. Safety operations and precautions. C. Maintenance	
6. Carry-out various heattreatment process	A. Bright annealing B. Case-hardening C. Precipitation hardening D. Solution heattreatment E. Nitriding F. Martempering	

SYLLABUS CHART

Module Title : _____

Block	Unit	Hours
	G. Austempering H. Sub-zero I. Age hardening	
7. Safety 1) Maintain various types of furnances a) Oil furnace b) Gas furnace c) Electric furnace	Safety a) Kinds of furnances used and their essential features b) Safety operation and precautions c) Maintenance	
2) Set and operate furnace to the required temperature	a) Procedure of operating and lighting 1 Oil furnace 2 Gas furnace 3 Electric furnace b) Select temperature according to material c) Rectify and maintain temperature during operation. d) Uses of temperature equipment	
3) Maintain various types of forging machines	a) Identify forging machines, essential features and maintenance b) Safety precautions during operations	
8. Set and operate forging machines	a) Steps and operate forging machine for various operations	
9. Check material for forging	a) Check drawing specification b) Kinds of steel for forging	

SYLLABUS CHART

Module Title : _____

Block	Unit	Hours
10. Operate forging machine for forging process.	a) Start machine to the required pressure. b) Check product during operation.	
11. Check, Test forging products	a) Colour test b) Macro test c) Hardning test	

SYLLABUS CHART

Module Title : Testing on Forging Products (2 weeks)

Block	Unit	Hours
1. Testing process for forging materials	A) Set and operate various types of testing forging equipment a) Spark test b) Macro test c) Bending test d) Tension test e) Hardness test f) Homming test g) Microstructure	
2. Rectify faults on finished forging products	A) Forging equipment B) Heating methods C) Forging processes D) Die for forging E) Appropriate material and appropriate quenching medium	
3. Safety	a) Safety	

SYLLABUS

- H2-1-1 Cast Iron Casting
(Gating and Riser System)
- H2-1-2 Cast Iron Casting
(Moulding, Melting and Analysis of Defects)
- H2-2 Steel Casting
- H2-3 Copper Alloy Castings
- H2-4 Aluminium Alloy Castings
- H3-1 Die Casting Technique
- H3-2 Advance Die Casting Technique
- H4-1 Investment Casting Technique
- H4-2 Advanced Investment Casting Technique
- H4-3 Traditional Lost Wax Technique

SYLLABUS CHART

Module Title : H2-I-1 Cast Iron Casting (Gating and Riser System P/L) (3 weeks)

Block	Unit	Hours
<p>H2-A</p> <p>1. Gating and risering system plan.</p>	<p>A. Basic of gating and risering system.</p> <p>a) Basic principle of gating</p> <p>b) Basic principle of risering</p> <p>B. How to plan gating and risering system</p> <p>a) Pouring time</p> <p>b) Pouring speed</p> <p>c) Design of pouring</p> <p>d) Effective height of sprue</p> <p>e) Design of sprue, runner gate and sprue base</p> <p>f) Rate sprue</p> <p>g) Design of head (feeder heads)</p> <p>C. Basic shape of cast and its gates and risers system.</p> <p>a) Block shapes</p> <p>b) Wheel shapes</p> <p>c) Couplings</p> <p>d) Cylinders</p> <p>e) Rings</p> <p>f) Plates</p> <p>g) Covers</p> <p>D. Example of gate and risers system.</p>	

SYLLABUS CHART

Module Title : H2-1-2 Cast Iron Casting (Moulding, Melting and Analysis) (3 weeks)

Block	Unit	Hours
H2-B 1. Moulding sands	A. Types of moulding. a) CO ₂ process. b) Shell mould process. c) Furane mould process. d) Green sand. e) Cement molasses. f) Sand testings	
2. Melting furnace	A. Induction furnace. a) Principles of melting Induction furnace. b) Melting of cast iron c) Melting of special casting. B. Cupola furnace a) Principles of melting cupola furnace. b) Composition of materials. c) Testing before pouring.	
3. Analysis of casting defects	A. Classification and counter measure of defects.	

SYLLABUS CHART

Module Title : H2-2 Steel Castings (3 weeks)

Block	Unit	Hours
1. Gating and risering system plan	A. Basic of gating and risering system. a) Basic principles of gating. b) Basic principles of risering. B. How to plan gating and risering system.	
2. Meltings of induction furnace	A. Carbon steel casting. B. Special casting. a) High chromiumsteel castings. b) Stainless steel castings. c) Others casting.	
3. Heat treatment	A. Various of heat-treatment process. a) Annealing. b) Normalizing. c) Stress relieving d) Spheroidizing	
4. Analysis of casting defects	A. Classification and counter measure.	

SYLLABUS CHART

Module Title : H2-3 Copper Alloy Castings (3 weeks)

Block	Unit	Hours
1. Gating and risering plan	A. Basic of gating and risering system. a) Basic principle of gating. b) Basic principle of risering. B. How to plan gating and risering system.	
2. Melting induction and crucible furnace	A. Non ferrous metals a) Brass and special brass. b) Bronze and special Bronze c) Other alloys.	
3. Sand testings	A. The various of sand testing.	
4. Analysis of casting defects	A. Classification and counter measure.	

SYLLABUS CHART

Module Title : H2-4 Aluminium Alloy Castings (3 weeks)

Block	Unit	Hours
1. Gating and risering system	A. Basic of gating and risering system. a) Basic principle of gating. b) Basic principle of risering. B. How to plan gating and risering system.	
2. Melting crucible furnace	A. The various of Al-Alloys.	
3. Sand testings	A. The various of sand testings.	
4. Analysis of casting defects	A. Classification and counter measure.	

SYLLABUS CHART

Module Title : H3-1. Die Casting Technique (3 weeks)

Block	Unit	Hours
1. Identify pressure die casting process	a) Introduction to Die casting. b) Difference between die casting and other casting methods.	
2. Set operate and maintain Die casting machine and accessories (aluminium & zinc).	a) Types of Die casting machine. b) Ports and function. c) Safety of Die casting machine. d) Maintenance of Die casting machine.	
3. Identify die and mold design.	a) Principle of dies. b) Types of die. c) Die materials. d) Springage allowance. e) Mold parting line. f) Gate design. g) Runner design h) Air vent and over flow. i) Mold cooling system.	
4. Identify molten metal flow in Die casting.	a) Types of molten metal flow. b) Setting. c) How to utilize the molten metal flow properties. d) Molten metal flow and product quality.	

SYLLABUS CHART

Module Title : _____

Block	Unit	Hours
5. Set, operate and maintain Die casting furnace	a) Types of furnace. b) Melting equipment for aluminium alloy. c) Melting process for zinc alloy. d) Metal transfer and feeding. e) Control composition.	
6. Clean, measure and inspect casting product to specification.	a) Cleaning process by machine. b) Polishing and plating process. c) Inspection & testing methods. d) Casting defects, causes and prevention.	

SYLLABUS CHART

Module Title : H3-2 Advanced Die Casting Technique (2 weeks)

Block	Unit	Hours
1. Operate and maintain	a) Maintenance of die casting machine. b) Safety of die casting machine.	
2. Analysis of die casting defects.	a) Casting defects causes and prevention.	

SYLLABUS CHART

Module Title : H-4-1 Investment Casting Technique (5 weeks)

Block	Unit	Hours
1. Make dies to produce the wax pattern	a) Design of investment casting. b) Master pattern & die making. c) Wax dies.	
2. Set was injection machine to produce wax pattern	a) Ports and function. b) Safety c) Pattern materials. d) Wax pattern property equipment. e) Injection problems and defects.	
3. Assemble the wax pattern to produce trees	a) Gating system. b) Runner system. c) Assembly methods. d) Special pattern assembly technique.	
4. Invest the wax pattern to produce the mold	a) Slurry preparation. i. for non ferrous metal. ii. for ferrous metal. b) Shell detect and controls.	
5. Remove the pattern from the molds by outo clave and preheat the mold	a) Dewaxing melrods. b) Firing and preheating of molds. c) Mold preheating temperature. d) Factor affecting dewaxing crocking	

SYLLABUS CHART

Module Title : _____

Block	Unit	Hours
6. Select ferrous and non ferrous metal for casting	a) Types of furnace. b) Casting methods. c) Control composition.	
7. Clean measure and inspect casting product to specification	a) Cleaning process by machine. b) Inspection and testing methods. c) Casting defects, causes and prevention.	

SYLLABUS CHART

Module Title : H4-2 Advanced Investment Casting Technique

Block	Unit	Hours
1. Produce the mould	a) Produce wax pattern. b) Special pattern assembly technique. c) Slurry preparation. d) Shell defects and control. e) Preheat the mould.	
2. Melting furnace	a) Induction furnaces. b) Control composition.	
3. Analysis of casting defects	a) Casting defects and causes prevention.	

SYLLABUS CHART

Module Title : H4-3 Traditional Los Wax Technique (2)

Block	Unit	Hours
<p>After researching and studying, we will decide in detail of syllabus.</p> <ol style="list-style-type: none">1. The design of castings2. Improve of mold Process3. Analysis of castings detects		

SYLLABUS

- EE1A • 1 : CONTACT CIRCUIT RELAY
MAINTENANCE AND REPAIR 3 Weeks
- EE1A • 2 : NON-ARCING CIRCUIT RELAY
MAINTENANCE AND REPAIR 3 Weeks

SYLLABUS CHART

Module Title : EE1A • 1 : CONTACT CIRCUIT RELAY MAINTENANCE AND REPAIR

Block	Unit	Hours
1. Introducing control circuit	<ul style="list-style-type: none"> a) Types of control system. b) Application of control system. c) Rules and regulation of installation. 	
2. Understanding and drawing of connection diagram in control circuit	<ul style="list-style-type: none"> a) Electrical symbols b) Types of connection diagram c) Understanding and drawing of connection diagram. 	
3. Equipment, apparatus and accessories used for control in contact circuit	<ul style="list-style-type: none"> a) Operation of relay. b) Determine specification for relay, meter and load. 	
4. Contracting and installing of control panel	<ul style="list-style-type: none"> a) Use of tool and materials. b) Preparing of board. c) Installing method and procedure. 	
5. Connecting of control circuit	<ul style="list-style-type: none"> a) Processing of distribution board. b) Disposition of distributing. c) Soldering process. d) Duct and cable distributing. 	
6. Constructing distribution board	<ul style="list-style-type: none"> a) Constructing of basic circuits. b) Constructing of applied circuits. c) Page and friction of circuits. 	

SYLLABUS CHART

Module Title : _____

Block	Unit	Hours
7. Maintenance and repair of control board	a) Procedure for maintenance and repair. b) Control circuit and load characteristic. c) Troubleshooting of simulated	9

SYLLABUS CHART

Module Title : EE1A.2: Non-Arcing Circuit Relay Maintenance and Repair

Block	Unit	Hours
1. Introduction of non-arcing circuit	a) Sorts of control system. b) Words of control system.	2
2. Understanding and drawing of connection diagram in non-arcing circuit	a) Electronics symbol. b) Sorts of connection diagram. c) Understanding of diagram. d) Drawing of diagram.	12
3. Equipment on electronics control in non-arcing circuit	a) Operation of semi-conductor element. b) Operation of parts for control. c) Operation of meter. d) Operation of load.	
4. Processing printed board and chassis in non-arcing circuit	a) Using of tools and materials. b) Soldering. c) Bundling of wires. d) End conducting of wire. e) Making of printed board. f) Making of chassis. g) Processing of conducting.	10

SYLLABUS CHART

Module Title : _____

Block	Unit	Hours
5. Treatment of measuring instruments	a) Principle of measuring instruments. b) Treatment of measuring instruments.	5
6. Conducting of control circuit	a) Conducting of basic circuits. b) Conducting of applied circuits. c) Test and inspection of circuit. d) Moving of Lift Unit for sequence load.	15
7. Matinenance and repair for control boards	a) Points for maintenance and repair of control circuit. b) Relation between control circuit and load.	5

SYLLABUS

- EE2 • 1 : MOTOR TROUBLE ANALYSIS
AND REPAIR 3 Weeks
- EE2 • 2 : TRANSFORMER TROUBLE
ANALYSIS AND REPAIR ... 3 Weeks

SYLLABUS CHART

Module Title : EE2.1: Motor Trouble Analysis and Repair (57H)

Block	Unit	Hours
1. Finishing	a) Introduction of finishing. b) Marking-off work. c) d) Filing e) Haling f) Screwing g) h) Cutting i) Measuring of length, angle etc. j) Soldering k) Welding	8
2. Determine the characteristic of motor	a) Principle characteristic and performance of motor. b) Determine and study various type of motors. c) Identify parts of motors.	3
3. Dismantle and reasonable of motor	a) A. C. motor	4
4. Design of motor	a) Single phase motor and generator. b) Three phase motor and generator.	15
4. Repair of motor	a) Single phase motor and generator. b) Three phase motor and generator.	19
5. Test and maintenance of motor	a) Test eq. speed test. b) Maintenance c) Trouble shooting.	8

SYLLABUS CHART

Module Title : EE2.2: Transformer Trouble Analysis and Repair (57H)

Block	Unit	Hours
1. Finishing	a) Introduction of finishing. b) Making-off work. c) Chiseling. d) Filing. e) Holing. f) Screwing g) h) Cutting. i) Measuring of length angle etc. j) Soldering. k) Welding.	8
2. Determine the characteristic of transformer	a) Drinciple, characteristic and performance of transformer. b) Determine and study, various type of transformer. c) Identify parts of transformer	3
3. Disirantle and reassemble of transformer	a) Single phase transformer b) Three phase transformer	4
4. Design of transformer	a) Mini transformer b) Single phase transformer (3 - 5 KVA)	15

SYLLABUS CHART

Module Title : _____

Block	Unit	Hours
5. Repair of transformer	a) Mini transformer (500W) b) Single phase transformer (3 - 5 KVA)	19
6. Test and maintenance of transformer	a) Test og. insulation test. b) Maintenance. c) Trouble shooting.	8

SYLLABUS

EE3 . 1 : MOTOR-GENERATOR CONTROL
TESTING 3 Weeks

SYLLABUS CHART

Module Title : EE3-1 Motor-Generator Control Testing (57H)

Block	Unit	Hours
1. Theory of motor and generator	a) Principle and characteristic of D.C. motor and generator. b) Principle and characteristic of induction motor. (Single phase, Three phase) c) Principle and characteristic of synchronous motor and generator. d) Selection of motor. e) Control of motor. f) Management of motor. g) Actual application of motor.	19
2. Generally electricity measurement	a) Introduction of measurement b) Measuring the D.C. voltage, current and power. c) Measuring the A.C. voltage, current and power. d) Measuring the power of high voltage and large current circuit. e) Measuring the power-factor and frequency. f) Measuring the various grades resistance. (low, medium, high) g) Measuring the grounded resistance. h) Observing the wave form by cathode-ray oscilloscope. i) Measuring the static-characteristic of transistor. j) Measuring the static-characteristic of S.C.R. (Silicon Controlled Rectifier) k) Measuring the logical circuit.	19

SYLLABUS CHART

Module Title : EE3-1 Motor-Generator Control Testing

Block	Unit	Hours
3. Applied test of motor	a) Characteristic test of D.C. motor. b) Characteristic test of A.C. motor. c) Test of D.C. motor - D.C. generator- three phase synchronized motor control. d) Test of D.C. motor - D.C. generator- -three phase synchronized generator control. e) Test of three phase shunt winding commutator - dynamometer - wound rotor three phase induction motor control. f) Test of parallel operating. g) Test of electric dynamometer.	19

SYLLABUS CHART

Module Title : EE4 Advanced radio service and repair 145 H (5W)

Block	Unit	Hours
1. Inspection and handling of tools	(1) Inspection of cutting pliers, long nose pliers and soldering iron. (2) Handling of cutting pliers, long nose pliers and soldering iron.	6H
2. Overhaul work of parts	(1) Overhaul of fixed resistor (2) Burning of fixed resistor experiment (3) Overhaul of condenser.	18H
3. Inspection of parts	(1) Inspection of fixed resistor. (2) Inspection of condenser. (3) Inspection of antenna coil, oscillation coil and intermediate frequency transformer. (4) Inspection of input/output transformers, speaker and earphone. (5) Inspection of variable resistor, variable capacitor and dry cell. (6) Inspection of diode. (7) Inspection of transistor (1) (8) Inspection of transistor (2)	34H
4. Assembling work	(1) Mounting of fixed resistor (2) Mounting of jumper wire (3) Mounting of condenser (capacitor) (4) Mounting of oscillation coil, intermediate frequency transformer, low frequency transformer and low frequency output transformer. (5) Mounting of diode, varistor and transistor. (6) Mounting of antenna coil, dynamic speaker, battery snap and variable capacitor.	24H

SYLLABUS CHART

Module Title : _____

Block	Unit	Hours
5. Checking of assembly	(1) Checking of parts mounting	6H
6. Soldering work	(1) Soldering of printed panel plane	6H
7. Regulation work	(1) Regulation of intermediate frequency (using measuring device) (2) Regulation of receiving frequency band (as above) (3) Tracking (as above) (4) Regulation of intermediate frequency (perform by receiving a broadcasting) (5) Regulation of intermediate frequency (as above) (6) Tracking (as above)	18H
8. Measureing work	(1) Measurement of currency consumption measurement of voltage (in normal condition) (2) Measurement of receiving frequency band. (as above) (3) Measurement of intermediate frequency (4) Measurement of maximum sensitivity (5) Measurement of selectivity (one single method)	18H
9. Troubleshooting of simulated defects	(1) No sound at all. (2) Cannot receive a broadcast.	12H
10. Overhauling work	(1) Remove all parts from the printed panel, and put them in order.	11H

SYLLABUS CHART

Module Title : EE5 Advanced TV service and repair 145H (5W)

Block	Unit	Hours
<p>1. Color Television</p> <p>(1) Basic handling</p>	<p>(1) Setting the receiving channel of a electronic synchronizing tuner.</p> <p>(2) Adjust the receiver tube peripheral parts to set the purity convergence and while balance.</p> <p>(3) By means of picture adjustment, adjust the pattern position, size, distortion etc.</p>	29H
<p>(2) Confirmation of normal operation</p>	<p>(1) Using the standard pattern signal of the PAL system, evaluate the quality of a sonochrome pitture and a color picture.</p>	29H
<p>(3) Replacement of main parts</p>	<p>(1) Master the procedure of removing and fitting a CPT, FBT, speaker, tuner, transitor and IC.</p>	29H
<p>(4) Circuit adjustment</p>	<p>(1) Master the procedure of adjusting the circuit of VIF, BPF, COLOR, CIF, AGC and DEFLECTION.</p>	29H
<p>(5) Simulated repair work practice</p>	<p>(1) Master the procedure of confirming the main symptoms of a color picture, and to check them, also gain a better understanding of circuit operation.</p>	29H

SYLLABUS CHART

Module Title : EE6 Inter-office communication equipment service and repair 87H(3W)

Block	Unit	Hours
1. Interphone system	(1) Basic handling operation	12H
	(2) Measuring operation under normal conditions	29H
	(3) Replacement of the main parts	29H
	(4) Simulated trouble exercise	17H

SYLLABUS CHART

EE7-1 Computer software

Module Title : (Electric/electronic office equipment service and repair)
203H(7W)

Block	Unit	Hours
1. Introduction to computer system	(1) Summary of the software (2) Summary of the hardware	12H
2. Theory of logical circuits	(1) The logical expression	12H
3. Disk operating system	(1) Summary of built-in commands (2) Summary of transient commands (3) Editor (4) BDOS Function call	29H
4. Assembly language	(1) 8080/8085A Assembly language (2) Z80 Assembly language	58H
5. Interpreter language	(1) BASIC language	29H
6. Compiler language	(1) FORTRAN language (2) Linking of the assembly language and the high level language	29H
7. Constructing of a sample program	(1) Sample calculation (2) Sample Graphics	34H

SYLLABUS CHART

EE7-2 Computer hardware

Module Title : (Electric/electronic office equipment service and repair)

232H(8W)

Block	Unit	Hours
1. Electronic measurement	(1) Handling of electronic equipments	29H
2. Electronic control	(1) Combinational circuits (2) Sequential circuits	58H
3. Assembly language	(1) 8080/8085A Assembly language (2) Z80 Assembly language	58H
4. Analysis of computer system	(1) Analysis of lines (2) Analysis of devices	58H
5. Control of high power system	(1) Control of a high power motor (2) Control of a pulse motor	29H

SYLLABUS CHART

EE7-2 Computer hardware

Module Title : (Electric/electronic office equipment service and repair) 232H(8W)

Block	Unit	Hours
1. Electronic measurement	(1) Handling of electronic equipments	29H
2. Electronic control	(1) Combinational circuits (2) Sequential circuits	58H
3. Assembly language	(1) 8080/8085A Assembly language (2) Z80 Assembly language	58H
4. Analysis of computer system	(1) Analysis of lines (2) Analysis of devices	58H
5. Control of high power system	(1) Control of a high power motor (2) Control of a pulse motor	29H

資料 5

供与機材一覧表（日本円 500 万円以上の物）及び使用状況

（庶務関係）

（1985年2月現在）

№	機 器 名	数量	規格・容量等	使用 状況	保管 状況	摘 要
1	複 写 機	1	RICOH FT4060	A	良好	使用状況（使用頻度） A：高，B：中，C：低
2	公 用 車	2	NISSAN C20 WINDOW VAN	A	"	
			MITSUBISHI GALANT STATION WAGON	A	"	少額の機器等についても不良のものはない

（自動車関係）

№	機 器 名	数量	規格・容量等	使用 状況	保管 状況	備 考
1	ブレーキ・テスター	1	BBT-102A-3		良好	
2	シャンドイナモメータ	1	BCD-200		"	
3	サイドスリップテスター	1	WG-150B-2		"	
4	エキゾースト・ガス・ アナライザ	1	AU-7CH	A	"	
5	ホイール・アライメント・ インジケータ	1	WAT-2000		"	
6	ポータブル・ロード・メータ	1	SL-200N		"	
7	エンジン・チューン・ ナップテスター	1	E-1600C	A	"	
8	オート・エンジン・チェッカ	1	EA-5500	A	"	
9	モーター・スコープ	1	MS-5050	A	"	
10	ディストリ・ビュータ・ テストベンチ	1	DS-747	A		使用中，故障発生， 現在修理中
11	ジェネレータ・スタータ・ テストベンチ	1	GS-1500	A	良好	
12	燃料噴射ポンプテスター	1	ND-FIP-12C	A	"	

№	機 器 名	数量	規格・容量等	使用 状況	保管 状況	備 考
13	エンジンダイナモータ	1	S F - 1.5	A	良好	
14	シリンダーボーリングマ	1	NWA - N0.1	A	"	
15	シリンダーホーニングマシン	1	MS - 1000	A	"	
16	ピンホール・ホーニング マシン	1	FK - 8A	B	"	
17	サーフェイス・グラインダー	1	MG - 10G - 1	B	"	
18	バルブ・リフエイサー	1	MB - 145	A	"	
19	バルブ・シート・カッタ ー(セット)	2	R - 2500	B	"	
20	2柱リフト	1	TPY - 25C		"	
21	4柱リフト	1	MK - 32		"	
22	ベビークレーン	1	OC - H1000	B	"	
23	ホイール・ balanサー	1	HWB - 301		"	
24	タイヤチェーンジャー	1	TCM - 151		"	
25	ブレーキ・ドラム旋盤	1	BDL - 200N		"	
26	エアー・コンプレッサー	1	SP - 75 CP	A	"	
27	エアー・ドライヤー	1	SA - 10S	A	"	
28	温水洗車機	1	CWH - 780	B	"	
29	スチーム・クリーナ	1	SW - 400K		"	
30	フレーム修正機	1	FM - 10		"	
31	炭酸ガス溶接機	1	TS - 500SA		"	
32	シャーリング・マシン	1	NS - 1306		"	
33	ハンド・ユニバーサル・ ベンダー	1	H - 800		"	
34	塗装ブース	1	BB - 30		"	
35	赤外線乾燥機	1	TRB - 32E		"	
36	教材用エンジン	2	トヨタ3K(G)	A	"	
37	教材用エンジン	2	トヨタL(D)	B	"	
38	教材用エンジン	1	マツダロータリー		"	
39	教材車(ステーションワゴン)	1	DXWMJ 810 DUG		"	
40	教材車(マイクロバス)	1	MW40 CSFHUGN		"	(注) 使用状況模作中、空白 については、該当訓練 コースが現在まで未開 講の為、未使用

(Software Development)

№	機 器 名	数 量	規 格 ・ 容 量 等	使 用 状 況	保 管 状 況	摘 要
1	コントロールデスク ユニット	1set	VHS ナショナル NV-7500EM (PAL, SECAM, NTSC)	A	良好	
2	データビューワー	1set	ナショナル WE-9060CN(PAL)	A	良好	
3	カラーカメラ	2set	ナショナル WV-3990SH(PAL)	B	良好 良好	
4	VTRダビング装置	1set	ナショナル NV-9240A(¼) NV-8200E(½) VC-266	B	良好	
5	リモートコントロールBox	1set	大沢 TRC-517	A	良好	
6	16 m/m 映写機	1set	BELL & HOWELL 1698	B	良好	
7	ビデオプロジェクター	2set	ナショナル TC-4000E	A	良好	
8	暗 幕	1set	大沢	A	良好	
9	編集用VTR (高級)	1set	ナショナルNV-9600A	B	良好	
10	編集用VTR	1set	ナショナルNV-9240A	B	良好	
11	編 集 機	1set	ナショナルNV-A500EII	B	良好	
12	カーテン	1set	大沢	B	良好	
13	ポータブルVTR	1set	ナショナルNV-9400E	B	良好	
14	自動カラスライド製作機	1set	ナショナルKV-5000	C	良好	

資料 No 6

現地調査機材一覧表 (5000M\$以上の物) 及び使用状況

職 種

(庶務関係)

(1985年2月現在)

№	機 器 名	数量	規格・容量等	使用 状況	保管 状況	摘 要
1	ISUZU DIESEL BUS	1	55人乗り	A	良好	使用状況(使用頻度) A:高 B:中, C:低
2	ISUZU Truck	1	3.9t	"	"	

(自動車関係)

№	機 器 名	数量	規格・容量等	使用 状況	保管 状況	摘 要
1	ノズル・クリーニング キット	2	バンザイ 99-55	A	良好	
2	インパクト・ エキストラクター	2	" HR401	A	"	
3	ノズル分解ジグ	2	" HH-112	A	"	
4	ノギス	4	530-312 測定範囲 150 mm	A	"	
5	キャリパ・ゲージ	1	DCG-35 0.025mm	A	"	
6	テレスコーピング・ゲージ	1	TG 8-150 S T	A	"	

※ 2000M\$以上の該当品目なし。

現在までのマレーシア側にて購入した品目をリストアップした。

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