

**Ministry of Social Development  
The Hashemite Kingdom of Jordan**

**BASIC DESIGN STUDY REPORT  
ON  
THE PROJECT FOR IMPROVEMENT OF EQUIPMENT  
FOR VOCATIONAL TRAINING  
FOR THE PEOPLE WITH DISABILITIES  
IN  
THE HASHEMITE KINGDOM OF JORDAN**

**MARCH 2001**

**JAPAN INTERNATIONAL COOPERATION AGENCY  
UNICO INTERNATIONAL CORPORATION**

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## PREFACE

In response to a request from the Government of the Hashemite Kingdom of Jordan, the Government of Japan decided to conduct a basic design study on the Project for Improvement of Equipment for Vocational Training for the People with Disabilities in the Hashemite Kingdom of Jordan and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Jordan a study team from September 5 to October 4, 2000.

The team held discussions with the officials concerned of the Government of Jordan, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Jordan in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Hashemite Kingdom of Jordan for their close cooperation extended to the team.

March, 2001



Kunihiko Saito  
President

Japan International Cooperation Agency

March, 2001

Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Improvement of Equipment for Vocational Training for the People with Disabilities in the Hashemite Kingdom of Jordan.

This study was conducted by UNICO International Corporation, under a contract to JICA, during the period from August 29, 2000 to March 31, 2001. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Jordan and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



Jun Ikeda

Project manager,

Basic design study team on

the Project for Improvement of Equipment for

Vocational Training for the People with

Disabilities in the Hashemite Kingdom of Jordan

UNICO International Corporation

## Location Map

### Jordan and Surrounding Countries



### Site Location



## Abbreviations

CBR	Community Based Rehabilitation
CEDH	Center for Early Detection of Handicaps
DOSD	Directorate of Social Development
GUVS	General Union of Voluntary Societies
ILO	International Labor Organization
IMF	International Monetary Fund
JD	Jordanian Dinar
LAN	Local Area Network
NGO	Non Governmental Organization
OS	Operating System
SDO	Social Development Office
UNICEF	United Nations Children's Fund
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in Near East
VTC	Vocational Training Corporation

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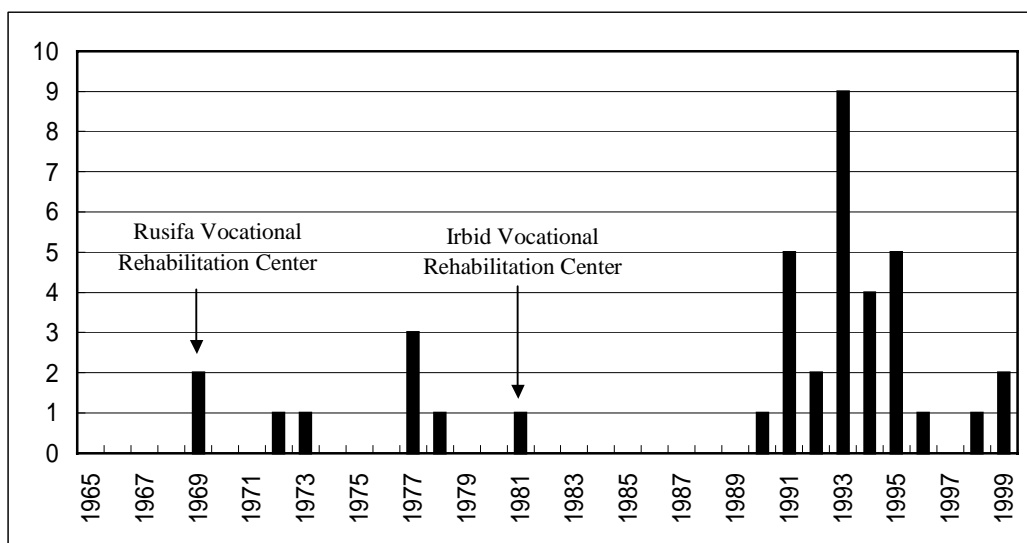


## **Chapter 1 Background of the Project**

## Chapter 1 Background of the Project

The Government of Jordan officially recognized the need to provide educational opportunities for disabled persons in around 1990, when the United Nations issued two declarations related to education—The “World Declaration on Education for All” and “The World Declaration on the Survival, Protection, and Development of Children.” Primary schools for disabled persons were constructed and established together with welfare and rehabilitation facilities (Fig.1-1), resulting in considerable improvements in the level of general education (compulsory education) throughout the country. However, the system emphasized lectures and rehabilitation rather than vocational training to impart professional skills and knowledge to help disabled persons find jobs and support themselves. Throughout the entire country, only two vocational rehabilitation centers, Rusifa and Irbid, were established to bring disabled persons into closer touch with society.

**Fig.1-1 Establishment of Public Facilities for disabled persons in Jordan**



Source: Ministry of Social Development Yearbook 1999

Meanwhile, the partitioning of the West Bank triggered several factors leading to a major economic crisis in Jordan, including monetary instability, a decline in inflowing capital from overseas workers, and a decline in financial aid from the oil producing countries of the Gulf. With IMF assistance, the government launched the Economic Adjustment Program for the Period 1989 – 1993 and initiated a variety of measures, including an austerity budget, reduction of the budget deficit, and currency devaluation. The progress of the program was disrupted by the Gulf War and its aftermath. Next, for the period from 1992 – 1998, the government initiated a new economic adjustment

program seeking reductions in government expenditures through the introduction of a consumption tax, the levying of higher utility charges, and termination or reduction of subsidies.

In 1993, the government enacted the Law for the Welfare of disabled persons, a new law seeking expansion in employment opportunities for disabled persons by requiring government offices and private enterprises to employ them. The success of the new legislation was limited, as violators were subject to no penal provisions, and the infrastructure to facilitate the employment of the disabled persons was still undeveloped. Even today, the Ministry of Labor and Ministry of Social Development hire limited numbers of disabled persons—numbers falling far short of the employment quota prescribed under the Law for the Welfare of disabled persons. There is no statistical data on employment of disabled persons by private enterprises. While some industries hire disabled persons—such as the sewing, woodworking, shoemaking, and hair cutting industries— they do not give special consideration to their disabled employees. In fact, most industries expect disabled persons to bring to the workplace the same level of skill as normal persons. Thus, if disabled persons are to find jobs in Jordan, a country with high unemployment, they need to acquire marketable skills and the willingness to work. Adequate vocational training for disabled persons should be effectively combined with the development of the infrastructure to support employment of disabled persons, as well as the understanding and cooperation of private enterprises.

However, the vocational training facilities in the country are not sufficient to supply workers with the skills that Jordan's industries need. Both the Rusifa and Irbid Vocational Rehabilitation Centers are relatively old (20 – 30 years), and due to the budgetary restraints brought by the economic crisis, the existing training facilities and equipment in Rusifa and Irbid are outdated, badly maintained, and in short supply. Thus, for many of the disabled persons in Jordan, vocational training does not lie on the horizon.

In October 1998, the Jordanian government asked the Japanese government to provide financial assistance for the upgrading and/or addition of equipment at the vocational rehabilitation centers in Rusifa and Irbid as a means of promoting the rehabilitation, education, vocational training, and improved living standards for disabled persons in Jordan.

## **Chapter 2 Contents of the Project**

## **Chapter 2 Contents of the Project**

### **2-1 Objectives of the Project**

This project is designed to upgrade and expand vocational rehabilitation for disabled persons in the country. By promoting the social participation of disabled persons and increasing their employment opportunities, this will help Jordan further integrate disabled persons into society—one of the major goals for the social development sector set forth in the nation's Economic and Social Development Plan for the Year (1999 – 2003). In particular, the project proposes the supply of equipment to the Rusifa Vocational Rehabilitation Center and the Irbid Vocational Rehabilitation Center, both of which offer vocational training courses to convey skills suitable for disabled persons and in demand in the labor market. By helping disabled persons obtain and improve various skills, the program will provide them with a means of overcoming their handicaps, of supporting themselves through their enhanced employment opportunities, and ultimately, of establishing their positions within local communities and achieving social participation and presence.

### **2-2 Basic Concept of the Project**

In October 1998, the Government of Jordan requested the Government of Japan to provide official aid for a number of educational institutions for disabled persons, including the School for the Visually Impaired, the School for Speech and Hearing Impaired, the Rehabilitation Center, and the School for the Mentally Disabled. The initial request was diverse and seemed to be difficult to meet under a single project. The preliminary study was conducted in April 1999, and the original request was revised to include the Rusifa Vocational Rehabilitation Center, the Irbid Vocational Rehabilitation Center, the Al-Amal Deaf-Mute School of Qwashmeh, and the Al-Nur Blind School of Amman. As it was decided to narrow the scope of the project to vocational training equipment, two facilities that did not appear to offer vocational courses—the Al-Amal Deaf-Mute School of Qwashmeh and the Al-Nur Blind School of Amman—were dropped from the list. During the subsequent field survey, the study team received a request from the Jordanian counterpart to include the former, the Al-Amal Deaf-Mute School of Qwashmeh, on the grounds that it did provide vocational training for its graduates on a small scale. After thorough consideration of the request, the survey team decided not to include the school in the project in view of the very small scale of its training courses compared to those offered at the two vocational

rehabilitation, in terms of both the enrollment (one-tenth the number of trainees) and content (only three courses offered). As a result, the project will cover the Rusifa Vocational Rehabilitation Center and the Irbid Vocational Rehabilitation Center.

The ILO Convention (No. 159) concerning Vocational Rehabilitation and Employment (Disabled Persons) sets the objective of vocational rehabilitation as: “To ensure that disabled persons can attain adequate employment, enjoy sustained and improved access to labor markets, and thereby become more closely integrated into society.” Note that “employment” here is a broad concept including employment not under a formal contract. Thus, it covers not only employment in the competitive labor market, but also self-employment, housework, farming or household tasks, sheltered employment, home-based employment, and all other works accompanying any form of earning.

Under this concept, training at the vocational rehabilitation centers is not limited to training to impart the skills required for ordinary employment, but comprises also training for the socialization of disabled persons, a group of persons within Jordan who have difficulty in working for business establishments, to convey the skills they need to support themselves at home or in their communities. In this sense, training for disabled persons includes schooling at a specified time, for an effective number of classroom hours. In addition, a training course is considered to achieve its purpose insofar as it helps students find prospects and opportunities in the future.

## **2-3 Basic Design**

### **2-3-1 Design Concept**

#### (1) Environmental considerations

Rusifa and Irbid are located in the northern part of Jordan, where the mean monthly temperature ranges between 8°C and 25°C, and the mean monthly relative humidity ranges between 35% and 75%. Annual rainfall is 300 mm, although the mean monthly rainfall varies between 0 mm and 70 mm due to the distinctive rainy and dry seasons within a year. There is no rainfall between June and September, and the mean maximum temperature for the month of August reaches 33°C, though on some days it can climb to as high as 40°C. Snow falls occasionally during the rainy season, and the mean minimum temperature in January drops to 5°C in January, though on some days it falls to below zero. The low humidity and lack of

rainfall during the dry season cause the air to become dusty, necessitating dust-proof measures for precision equipment such as computers and sewing machines.

(2) Social considerations

The Rusifa Vocational Rehabilitation Center has some administrative staff and instructors who understand English, but there are no such persons at the Irbid Vocational Rehabilitation Center. Thus, the maintenance and operation manuals for advanced equipment should be written in Arabic, and the control panels of large equipment should be indicated in Arabic to ensure operational safety.

(3) On local equipment

The techniques and skills taught at vocational training schools must be readily usable in the work environment. In this connection, it is important to use equipment similar to that used by the local manufacturers so that people trained in the use of such equipment will not need to be retrained when employed by a company. For this reason, priority should be given to equipment that is similar to locally available equipment or equipment widely used by local manufacturers. While locally produced equipment will not be procured for this project as it does not meet quality requirements or other specifications, the equipment selected should be a type that local agents will be able to service for maintenance.

(4) On maintenance capabilities

As most of the planned equipment will be replacing older equipment or added to it, it will be the same as the older equipment, or at least similar to it. Thus, the maintenance organizations at the two centers will be readily able to perform the required maintenance work. In the selection process, priority should be given to products that require less maintenance and can receive service from local agents or distributors. Moreover, as the two centers will have to operate and manage more units with a wider variety of equipment, it will imperative to establish a reliable inventory management method for hand tools, spare parts, and other consumables, including daily checks and the use of warehouses and stacks for secured storage.

(5) On the type and grade of equipment

To teach basic skills in machine operation as well as flexibility in adopting new technology —important factors for new workers if they are to be favorably evaluated

by their employers —general-purpose machinery and special machine tools that are widely used by the manufacturers will be procured. In addition, hand tools will be included to teach disabled persons the skills that they will require if they start their own shops due to a scarcity of employment opportunities elsewhere.

(6) On the project schedule

As the project will primarily procure standard machinery and equipment that will not require a considerable period for manufacture and delivery, it can be completed in a single year. However, a possible slowdown in work during Ramadan should be taken into account.

### **2-3-2 Basic Design**

(1) Overall plan

1) Equipment selection policy

Given the shortage of basic training equipment, the aging of existing equipment, and financial constraints facing the Jordanian government, the planned equipment should require low to minimal maintenance costs and be subject to the following priority factors.

To ensure that graduates from the centers receive favorable evaluations from their employers, the centers should teach basic skills in machine operation and flexibility in adopting new technology. This can be accomplished by allowing trainees to practice with standard equipment of a type used by as many manufacturers as possible. Thus, the project will emphasize standard equipment. In addition, to help trainees become more flexible in the use of different machines, special machine tools of a type widely used by the manufacturers will be procured.

There are many fewer employment opportunities available to disabled persons, who cannot move freely outside and will likely have to work at their homes or in their own shops. To teach them the skills required to start their own businesses at a small cost, the list of planned equipment will include many hand tools.

In addition to the vocational training equipment, the project will provide physiotherapy equipment, sports equipment, and musical instruments for rehabilitation purposes, in consideration of the playgrounds and rooms available at the centers.



Occupational accident records indicate that woodworking and bookbinding courses are subject to somewhat higher accident risks than other courses. Many of the accidents that occur result in injuries to the fingers, hands, shoulders, and arms. As these accidents are generally caused by cutting machines and rotary equipment, this type of machinery should be equipped with safety devices, and all persons using such machinery should wear safety glasses and other protective devices.

Though racks are not included in the request, they should be added as required to ensure proper maintenance and safety.

Equipment to be used for a new course should be added only when the costs for its instructors and maintenance staff are budgeted.

## 2) Selection criteria

### A: Necessity

To meet all of the following standards:

- Equipment required to perform the training in the training program
- Equipment that should not be fully automatic
- Equipment not designed for mass production

To meet one or more of the following standards:

- Equipment required for educational items included in the curriculum accompanying the training program (e.g., sports equipment and musical instruments)
- Equipment or devices required to protect the health of the trainees (e.g., dust collectors for the woodworking course)
- Equipment required for equipment maintenance (e.g., racks)

### B: Adequacy (to meet all of the following standards)

- A training room, instructors, and other resources for equipment operation and maintenance are secured.
- Spare parts and consumables required for equipment operation and maintenance are not expensive and are covered by an allotted budget.
- Spare parts and consumables are available in the country.
- Equipment is suitable for vocational training (high school level)

### C: Determination of unit requirements

The planned equipment is classified into the following categories, and unit requirements are estimated on the basis the number of trainees:

- Equipment for single use by each trainee
- Equipment for group training (1 unit per course, 1 unit per training room, and 1 unit per group of trainees)

- Equipment for demonstration by instructor
- Other

The proposed unit requirements are determined by subtracting the number of existing units (serviceable for a while) from the estimated unit requirements.

(2) Equipment plan

In selecting the planned equipment, the necessity and adequacy for the requested equipment were considered on the basis of the content of the training program for each training course, the size of the training room, the numbers of instructors, the prices and availability of spare parts and consumables, and the level of training at vocational training facilities for ordinary people in the country. Appendix 6-1 shows the training program currently used. The same training program is operated by the two centers, with some modifications to adjust to the type and level of disability.

**Table 2-1 Enrollment in the Rusifa Vocational Rehabilitation Center**

Training Course	Male			Female			Total		
	G1	G2	Total	G1	G2	Total	G1	G2	Total
Woodworking	10	10	20				10	10	20
Leather Working & Shoemaking	10	10	20				10	10	20
Tailoring & Sewing, Dressmaking (male)	10	10	20				10	10	20
Tailoring & Sewing, Dressmaking (female)				10	10	20	10	10	20
Knitting				5	5	10	5	5	10
Hairdressing (female)				10	-	10	10	-	10
Hairdressing (male) (new)	10	-	10				10	-	10
Bookbinding	10	10	20				10	10	20
Upholstering	5	5	10				5	5	10
Word Processing (new)				10	-	10	10	-	10
Piping (new)	10	10	20				10	10	20
Total	65	55	120	35	15	50	100	70	170

**Table2-2 Enrollment in the Irbid Vocational Rehabilitation Center**

Training Course	Male			Female			Total		
	G1	G2	Total	G1	G2	Total	G1	G2	Total
Woodworking	10	10	20				10	10	20
Leather Working & Shoemaking	10	10	20				10	10	20
Tailoring & Sewing, Dressmaking (male)	10	10	20				10	10	20
Tailoring & Sewing, Dressmaking (female)				10	10	20	10	10	20
Knitting				5	5	10	5	5	10
Hairdressing (female)				10	-	10	10	-	10
Hairdressing (male) (new)	10	-	10				10	-	10
Upholstering	5	5	10				5	5	10
Word Processing (new)				10	-	10	10	-	10
<b>Total</b>	<b>45</b>	<b>35</b>	<b>80</b>	<b>35</b>	<b>15</b>	<b>50</b>	<b>80</b>	<b>50</b>	<b>130</b>

Unit requirements for the planned equipment were estimated from the unit requirements for each piece of equipment, determined on the basis of the expected frequency of equipment use based on the training program), the type of use (e.g., single use by each trainee, or use of one unit per training course, per group training session, or for demonstration by the instructor), and the proposed number of trainees per course (Tables 2-1 and 2-2), less the number of serviceable units.

The 17 types of equipment included in the original request (9 for training courses and 8 for other purposes) were evaluated as follows.

In addition to the training courses for which equipment is requested, both centers offer courses that will require no equipment. These include the car maintenance, painting, welding and handcraft courses at the Rusifa Vocational Rehabilitation Center, and the handicraft course at the Irbid Vocational Rehabilitation Center. All of these courses have enough equipment required for training.

#### Equipment for the woodworking course

The two vocational rehabilitation centers have requested equipment for the existing training courses in this category. The training program (Appendix 6-1) consists of lecture courses covering work safety, wood types, and various other subjects, together with practical training on the use of hand and electric tools, and the manufacture of wood furniture. The program takes two years to complete.

The study team selected hand and electric tools required for cutting, surface finishing, boring, molding, and other woodworking—activities covered in the training courses. Table 2-3 lists electrical tools included in the request, classified by the type of work. Note that different tools are required for the same type of work at different stages (cutting, finishing, etc.).

**Table 2-3 Types of Training and Electrical Tools Used**

Type of Training	Electrical tools
Cutting	band saw, circular saw, electric hand-held circular saw, electric jigsaw
Surface finishing	planer, pedestal grinder, electric hand grinder, electric hand planer, electric sander, side drilling and sunta planer
Boring	bench drill, electric hand drill, chisel
Molding	router, electric saber machine, Formica machine
Others	woodworking press, grinder, lathe, column drill

At the request of the centers, safety measures and safety devices are to be considered in the project. As the training program includes a work safety course, safety devices, safety glasses, and protective gloves will be provided for use with machine tools that have a risk of accident. Moreover, dust collectors will be included to maintain a better working environment, and racks will be supplied to store portable electric tools, hand tools, spare parts, and consumables.

To estimate unit requirements for the planned equipment, the number of trainees (male only) is assumed to be 10 per each year, or a total of 20 for two years. Unit requirements estimated from the class size were adjusted according to the size of the equipment and frequency of use. For example, one set of hand tools is estimated to be required for every two students (because of the high frequency of use), while one large woodworking machine was estimated to be required per course.

In addition to the equipment already used in the training programs, the equipment used by woodworking shops in the areas nearby the two centers has also been considered in the selection process (excluding automated equipment used for mass production). Through the use of this latter equipment, graduates from the centers will become more competitive in the local job market and can quickly learn their jobs once employed. As many graduates from the centers are employed at a production center near the Rusifa Vocational Rehabilitation Center (operated under assistance of the German government), the equipment used at that facility has been given extra attention in the selection process.

### Equipment for leather working and shoemaking courses

The Jordanian government has requested equipment for the two courses currently conducted at the Rusifa Vocational Rehabilitation Center, as well as for the courses to be newly offered at the Irbid Vocational Rehabilitation Center. The training program consists of lectures covering work safety, types of equipment and tools, and various other subjects, together with practical training for leather cutting, the operation of sewing machines, and shoemaking. The program takes two years to complete. The list of planned equipment includes equipment required for the practical training conducted in the training program. In addition, racks are included to store hand tools and spare parts. As shoemaking methods vary according to the process and equipment used, equipment was selected to meet the needs for two major methods; i.e., the sewing of the upper and the sole (Goodyear Welted and McKay methods), and adhesion and pressurized bonding (cemented method).

To estimate unit requirements for the planned equipment, the number of trainees (male only) at each center is assumed to be 10 per one year, or a total of 20 for two years. Unit requirements estimated from the class size were adjusted on the basis of the size of the equipment and the frequency of use. For example, one set of hand tools was estimated to be required for every two students (due to the high frequency of use), while only one unit of large machinery was estimated to be required per course (e.g., a bind roll machine). In the Irbid Vocation Rehabilitation Center, the counterpart is expected to install wiring up to the training room for a three-phase power source for the equipment.

In addition, as the areas nearby the centers have many small shoe and leather bag shops that are labor intensive and expected to employ graduates from the centers, the equipment used within these shops has also been considered in the selection process (with the exception of equipment used for mass production). The study team has also considered equipment owned by the production center near the Rusifa Vocation Rehabilitation Center (a facility equipped with shoe and leather workshops), a major employer of the center's graduates.

Equipment for the tailoring, sewing, and dressmaking courses

The two vocational rehabilitation centers have requested equipment for the existing courses. The training program consists of lectures on work safety, types of tools and equipment used, and various other subjects, together with practical training for hand sewing, the use of sewing machines, and the sewing of trousers, skirts, shirts, and jackets. The program takes two years to complete. The list of planned equipment includes those required for practical training related to design, sewing, and finishing, as covered in the training program. In addition, racks are added to store tools, spare parts, and consumables. Sewing machines for the home and industrial models are both required, depending on the content of the training program. Table 2-4 lists the types of industrial sewing machines to be used in the project, together with the types of garments they will sew.

To estimate unit requirements for the planned equipment, the number of trainees at each center is assumed to be 10 per one year, or a total of 20 for two years. Unit requirements estimated from the class size were adjusted on the basis of the size of the equipment and the frequency of use. Specifically, estimated requirements include one set of hand tools per trainee (frequently used), one home sewing machine per two trainees (frequently used), and one special industrial sewing machine per course. In addition, equipment from the sewing shop in the production center near the Rusifa Vocation Rehabilitation Center (which has a sewing shop) has also been considered in the selection process.

**Table 2-4 Industrial Sewing Machines and Garments**

Type of Garment Type of sewing machine	Trousers	Skirt	Apron	Shirt	Pajamas	Jacket	T-shirt	Dress	Robe
1-needle lockstitch machine									
1-needle needle feed lockstitch machine									
1-needle, bottom & variable top feed lockstitch machine									
2-needle, 4-thread overlock machine									
Variable top feed overlock machine (rake-in type)									
3-needle double chain stitch machine with cloth puller	(Jeans)	(Jeans)							

#### Equipment for the knitting course

The two vocational rehabilitation centers have requested equipment for the existing courses. The two-year training program consists of practical training courses on machine sewing and sweater knitting. The equipment required for practical training in the program is included in the supply list. In addition, racks are added to store hand tools and spare parts.

To estimate unit requirements for the planned equipment, the number of trainees (female only) at each center is assumed to be 5 per one year, or a total of 10 for two years. Unit requirements estimated from the class size were adjusted on the basis of the frequency of use.

The areas with centers nearby have small knitting shops, most of which are family-run operations. In addition, graduates from the training program have the employment opportunity of contract knitting at home to meet the heavy demand for sweaters and other knitted products for the cold winter.

#### Equipment for the hairdressing course (for both males and females)

The Jordanian government has requested equipment for the existing hairdressing courses (for females) at the two centers, and equipment for a new hairdressing course (for males) to be commenced. The training program consists of lectures covering work safety, types of equipment and tools used, types of shampoos, and various other subjects, together with practical training for shampooing, cutting, drying, arranging, facial massage, and makeup. The study team selected equipment required for practical training in the program. In addition, racks are included to store hand tools, spare parts and consumables.

To estimate unit requirements for the planned equipment, the average number of trainees in the hairdressing (female) course at the Rusifa Vocational Rehabilitation Center is assumed to be 10, and that in the new male hairdressing course is also 10. The number of trainees in the hairdressing (female) course at the Irbid Vocational Rehabilitation Center is assumed to be 6 per year, but the full quota for two years is set at 10. The number of students in the new male hairdressing course is assumed to be 10. Unit requirements estimated from the class size were adjusted according to the size of the equipment and frequency of use.

Note that hot-water supply systems and water and gas pipes connected to washbasins will be installed by the Jordanian government. Washbasins will be installed within washrooms because both water supply and drainage are required. The study team selected the equipment in consideration of those used at hairdressing schools, barbers, and beauty salons in Japan.

#### Equipment for the word processing course

The two vocational rehabilitation centers have requested equipment for the new word processing courses to be commenced. The requested equipment consists primarily of personal computers (PCs) and peripherals. The PC operating system, keyboards, and software (including the word-processing software itself) should all support the Arabic language and characters (as well as English). Assuming that each center will teach 10 students per course, 10 PCs will be provided for the students and 1 PC will be provided for the instructor.

In addition, a laser printer and a LAN system to share the printer and other resources will be provided for each classroom, and desks and chairs will be provided as required. The PCs for the course instructors will be used for demonstration during the course as well as preparation of course materials and compilation and management of student data. A scanner will be considered for preparation of course materials at each center.

#### Equipment for the artificial organ making course (special)

The Rusifa Vocational Rehabilitation Center has requested equipment for its artificial limb and orthosis course. Trainees in the course are mainly people who use artificial limbs or orthosis themselves, and want to learn to repair their own artificial limbs or to work as professionals in the field of orthosis repair in the future. This course is a special course, held only when there is a demand. Many trainees take the course while enrolled in other courses (because they have broken an artificial limb or orthosis) or after completing them. When the course is not held, instructors repair artificial limbs and wheelchairs on a contract basis.

The training period generally ranges from 3 to 6 months, but this varies with the disabilities of the participants enrolled. While a relatively short training period is required for trainees who want to learn how to repair their own artificial limbs and orthoses, it takes longer to learn professional skills. Training can be



held throughout the year, but enrollment is limited to a few people due to the limited availability of equipment.

The planned equipment consists of those used for repairing and manufacturing artificial limbs and orthoses. Plastic molding machines (vacuum forming machines and electric incubators) are not included in the list as the skills required to operate these machines are fairly advanced and not in wide demand in the job market. The proposed list includes electric and hand tools required for repair work, and racks to store tools and spare parts. It should be noted that the demand for wheelchair repair is expected to grow in the future, as the demand for wheelchairs themselves is increasing.

#### Musical instruments

Music is an effective medium to help people with hearing disabilities expand their range of communication, as well as recognize the vibrations and stimulations that accompany music. Group activities, on the other hand, strengthen concentration and the spirit of cooperation in the classroom, while improving relationships among students. A series of proposed musical instruments will be supplied to both facilities and used during music classes (one hour per week). Students will use them for music therapy both during the class and during their breaks. While these activities are not exactly vocation training, they are a crucial means of maximizing the effects of vocational rehabilitation. The selected musical instruments selected are types used middle schools in Jordan, where musical education chiefly consists of listening to a variety of music, choruses (piano or electronic piano) and instruments (melodeon, pianica, keyboard, percussion, etc.). As a combination of these activities is known to produce a well-balanced educational effect, the proposed list includes audio equipment, electronic pianos for chorus, and drum sets.

**Table 2-5 Schedule**

Period	Sunday	Monday	Tuesday	Wednesday	Thursday
8:00 ~ 10:30	Training (Note 1)	Training	Training	Training	<b>Special Class</b> (Note 2)
10:30 ~ 11:00	Interval	Interval	Interval	Interval	Interval
11:00 ~ 13:00	Training	<b>Special Class</b> (Note 2)	Training	Training	Training
13:00 ~ 13:30	Cleaning	Cleaning	Cleaning	Cleaning	Cleaning

Note 1: The detailed content of training is specified for each student in the form of an annual plan, based on the student's current ability and skill. Once the student reaches a certain level, he or she graduates to the next level. The latter half of the second year includes work study and field tours to various companies.

Note 2: The special classes consist of music, sports, and video viewing. All three of these activities are designed and scheduled for each course.

### Sports equipment

Sports or physical activities are highly useful in relaxing and refreshing the minds and bodies of students who become tense in training. Stress that builds up during training is released in the form of kinetic energy, and the students are better able to prepare themselves for their next training activity. Sports also awaken the joy of physical movement in disabled persons and help to reduce their alienation from physical activities. Sports equipment will be used for ergotherapy during the physical education class (one hour per week) and breaks.

While sports are not directly associated with vocation training, like music, they are an essential means to maximize the effect of vocational rehabilitation. The study team selected sports equipment from among the types now used for football, volleyball, and basketball at middle schools in Jordan. These three sports are very popular in Jordanian schools, and they were deemed optimal in view of their popularity and their effectiveness in creating the above effects for disabled persons.

### Physiotherapy equipment

In Jordan, physiotherapy must be performed by physicians or physiotherapists, the latter of whom must be certified by the Ministry of Health. The Rusifa Vocational Rehabilitation Center employs several certified physiotherapists. In principle, physiotherapy should be performed under the direction of a physician. Physiotherapists at the center are authorized by a physician working for the Ministry of Social Development to evaluate disabled persons and make therapy plans, subject to consultation with a physician as required.

It is therefore assured that the personnel at the Rusifa Vocational Rehabilitation Center will be capable of operating physiotherapy equipment safely. On the other hand, the Irbid Vocational Rehabilitation Center is not staffed by any physiotherapists and has few prospects to hire any in the future. While this precludes the assignment of physiotherapy equipment at the Irbid facility, ergotherapy equipment should be supplied to this facility to provide ergotherapy for the disabled persons being trained there. If this facility is not equipped with ergotherapy equipment, students at the facility requiring ergotherapy will be forced to travel to other rehabilitation centers within the city of Irbid to receive ergotherapy (these facilities are also under the supervision of the Ministry of Social Development).

#### Equipment for the bookbinding course

The Rusifa Vocational Rehabilitation Center has requested equipment for the bookbinding course. The training program consists of lectures on work safety, types of tools and equipment, and various other subjects, together with practical training in sewing, binding, and the use of cutters. The program takes two years to complete. The list of planned equipment includes equipment required for practical training conducted under the program.

One unit of each piece of equipment is estimated be required for each class, regardless of the class size, based on the frequency of use. While the class capacity is set at 20, the average enrollment currently ranges between 7 or 8 people, or a total of about 15 for two years. Note that most of the bookbinding carried out in Jordan is done manually. Equipment selection has taken into account the equipment widely owned by printing and makeup shops in the areas around the centers, excluding equipment used for automation and mass production.

#### Equipment for the upholstery course

The two vocational rehabilitation centers have requested the equipment for the existing courses. The training program consists of lectures on work safety, types of equipment and tools, and various other related fields, together practical training for the cutting of cloth, leather, sponge and other materials for sofas (and in some cases sheet covers for car compartments). The program requires two years to complete. The list of planned equipment includes equipment to meet practical training requirements. Note that the course focuses on training to learn the skills

in upholstering sofas (and making sheet covers for car compartments), a skill widely demanded by government offices and business establishments. As a result, the planned equipment is related to the upholstering of sofas only. The wooden frames for sofas are made in the woodworking process, a skill taught in the woodworking course but not thoroughly covered in this course.

The course is only open to males. The number of students currently ranges between 7 and 8 per year. The class capacity is set at 10, and the unit requirements for each type of equipment are estimated and adjusted based on the expected frequency of use.

#### Equipment for the piping course

The Rusifa Vocational Rehabilitation Center has requested equipment for a newly offered course in piping. Training will cover screw cutting, pipe bending, and other skills required to prepare, connect, and lay water and gas pipes.

The course is only open to males. The class capacity is set at 10, and the unit requirements for each type of equipment are estimated and adjusted based on the expected frequency of use.

#### Teaching equipment

The two vocational rehabilitation centers have requested screens, video projects, videocassette recorders, video cameras, and TV sets to improve the educational effect of their courses. At present, all of the training courses are conducted using the same equipment, tools, and other goods used by the manufacturers. The use of audiovisual aids will allow subjects to be taught from various perspectives with a stronger impact. Video cameras will be used to record the training process and the graduates at work, as a means of raising the motivation of the trainees.

The Rusifa Vocational Rehabilitation Center has an audiovisual room to show video programs, and a VCR and a TV set will be provided and shared by different training courses. Two other pieces of equipment, a screen and video projector, were dropped from the list. The Irbid Vocational Rehabilitation Center has no audiovisual room, so it is assumed that lectures there will be conducted in the same rooms where practical training is held. A portable screen, video projector, and

VCR will be supplied and shared by the training courses at the Irbid facility, but no TV will be provided.

#### Personal computer for administration

As administration is not directly related to vocational training, the PC purchased for the instructor of the word processing course (see above) will also be used for administrative functions.

#### Buses for transportation

Two minibuses will be provided for each center. The number of buses provided and the size of the vehicles were selected in consideration of road conditions, the availability of public transport services, and the width of the local roads. Details are considered in the next section.

#### Double cabin pickup

While pickup services are useful for the transport of materials and products, visits from potential employers, and the conveyance of trainees to and from their home, the level of need is not pressing. For this reason, double cabin pickup equipment is excluded from the list of planned equipment.

### (3) On busses for transportation

#### 1) Geographical conditions around the vocational rehabilitation centers, and transportation access

The Rusifa Vocational Rehabilitation Center is located midway between Amman and Zarqa city in the northeast region. It is remote from the bus routes serving the two cities, as well as the inter-city bus route and major highway connecting them. The many students who live in Amman or Zarqa must change buses several times to reach the Rusifa facility, at considerable expense in terms of both time and money.

The Irbid Vocational Rehabilitation Center is located in an outer margin of Irbid city, a major city in the northern region. Public bus service extends from a terminal in the city center to suburbs in four directions, but most students must change buses at the central terminal due to the scarcity of circular bus routes

within the city area. The redundant travel to and from the city center takes considerable time and drives up the cost of schooling at the Irbid facility.

## 2) Diverse needs for different types of disabilities

By the latest count, 95% of the students training at the two vocational centers have either hearing or mental impairments, while those with physical challenges account for only 5%. There are no training courses for the visually challenged. Neither center can accept people with visual disabilities as they lack adequate facilities, experienced instructors, and appropriate equipment, not to mention training courses designed for the visually challenged. On the other hand, both centers can offer training courses for physically disabled persons, within certain limits prescribed by the type and level of disability. It is difficult to accurately estimate the number of disabled persons in Jordan as families often keep relatives with disabilities out of public, and available data vary greatly with the time of survey or the type of research organization. Notwithstanding, the percentage of physically disabled persons in the total population is estimated to be much higher than 5%.

The Rusifa and Irbid Vocational Rehabilitation Centers are the only national facilities to provide vocational rehabilitation for disabled persons, and both are mandated to meet the diverse needs for persons with different types of disabilities. However, getting to the two centers is very difficult for physically disabled persons as the sidewalks are very narrow and bumpy, the streets have rotary intersections that are difficult to cross, and the cities themselves are built on hilly ground with steep slopes.

## 3) Need for education and training

Disabled persons tend to grow up within the confines of their homes and neighborhoods, with less contact with the outside world. As a result, they often lack flexibility in adapting themselves to new environments or communicating with other people smoothly. This inflexibility can also extend to the use of machines and equipment. Thus, when vocationally rehabilitated persons encounter new equipment that is markedly different than the equipment they have been trained to work with at centers, they may refuse to accept the new equipment or take considerable time to acquire adequate skills in using them.

To keep disabled persons from maladjusting to their new environments, to help them find jobs, and to ensure that they are accepted by employers and the general public, it will be important, during the course of the training period, to afford opportunities for disabled persons and companies to work together. Doing so will help them become more familiar with each other and communicate more smoothly. For this purpose, the training programs at the centers incorporate work study and other field experience at the manufacturers (woodworking, upholstery, tailoring and sewing, dressmaking, leather working, and shoemaking). Motor vehicles are frequently required to visit the companies that accept students, to send students to companies for interviews, and to take field trips included in the training programs. As the Rusifa Vocational Rehabilitation Center does not have its own bus for such purposes, long hours and considerable amounts of money are required to arrange visits to factories situated in industrial estates in the suburbs of the cities.

4) Reduction of burdens on students in terms of time and cost

Trainees receive 10JD from the government for their traveling expenses, but this is not sufficient to cover the full travel costs incurred by the repeated bus transfers required to get to the remote areas in which the centers are located. Interview surveys of students from the two centers indicate that the students have to pay 5JD to 10JD from their own pockets each month. For many these amounts are significant and can create a financial burden on their families.

**Table 2-6 Average Monthly Wages (JD)**

Major Occupation Groups	Male	Female
Legislators, Senior Officials and Managers	581.1	354.1
Professionals	344.1	233.7
Technicians and Associate Professionals	241.8	182.0
Clerks	228.3	206.4
Service Workers and Shop and Market Sales Workers	152.9	169.8
Skilled Agricultural and Fishing Workers	103.8	90.9
Craft and Related Trades Workers	175.1	83.1
Plant and Machine Operators and Assemblers	196.9	95.4
Elementary Occupations	141.5	132.1

Source: Statistical Yearbook 1999

#### 5) Support for the weak in society

More than 90% of the Jordanian population are Islam, but the country does not enforce religious precepts as strictly as other Arabic countries. While women are generally not excluded from social participation and are allowed to take buses alone or to hold jobs, they still stay at home in most areas of the country other than the central part of Amman. Disabled persons also stay at home as their families do not like them to go out, and it is difficult to accurately estimate their numbers. To improve the situation, UNICEF and the Swedish government are carrying out a project entitled "Community-Based Rehabilitation" to help women and disabled persons establish small businesses to make embroidery, textiles, and souvenirs. However, this project is confined to Mafraq, Karak, and East Amman, and disabled persons and women in other areas often have little opportunity to support themselves. In particular, those living in rural areas cannot go out freely due to the scarcity of public transportation, and they face difficulty in training at vocational rehabilitation centers as their families often oppose the idea.

#### 6) Current state of school bus service

The Irbid Vocational Rehabilitation Center owns a minibus (mileage over 300,000km) to transport students to and from their communities. Even with this minibus service, students along some routes have wait for more than three hours to catch a bus home. Female students at the Rusifa Vocational Rehabilitation Center can catch a lift in the school bus operated by the adjacent school for the deaf, but the males are not allowed to ride because they must be kept separate from the females attending the other school (primary education). Also, the capacity of the bus and bus routes are limited. As a result, the Rusifa Vocational Rehabilitation Center must take into account the home addresses of applicants when they consider application for admission. This hinders the normal operation of the centers, institutions established to impartially serve the public interest.



**Table 2-7 Current State of School Bus Service by the Rusifa Vocational Rehabilitation Center**

Bus route	Aria	Bus stops (Appendix 6-2) and numbers of passengers	Time required	Mileage (km / each)
1	Zarqa North	: 5, : 2	1 hour	40 km
2	Zarqa Center	: 2, : 6	50 minutes	35 km
3	Amman North	: 1, : 2 : 6, : 3	1.5 hours	70 km
4	Zarqa West	: 1, : 3, : 3	40 minutes	40 km
5	Rusifa Suburban	: 1, : 5	40 minutes	40 km
	Total	40		

Note: The above stops are exclusively for the use of the trainees of the center. The bus services other areas for the students of the school for the deaf.

**Table 2-8 Current State of School Bus Service by the Irbid Vocational Rehabilitation Center**

Bus route	Aria	Bus stops (Appendix 6-2) and numbers of passengers	Time required	Mileage (km / each)
1	Irbid Center	: 4, : 8	30 minutes	10 km
2	Irbid East	: 7, : 4	40 minutes	25 km
3	Irbid South-East/South	: 8, : 5	1 hour	30 km
4	Irbid South-West	: 4	20 minutes	6 km
5	Bus Center	25	20 minutes	4 km
	Total	65	2 hour 50 minutes	

Note: One bus covers five routes.

7) Estimation of operation and maintenance costs for school buses and major benefits

Assuming that each vocational rehabilitation center has two minibuses, operation and maintenance costs are estimated as follows.

- (i) The subsidy to bus users from the center is 10JD per person per month.
- (ii) When four buses are purchased (two for each area), a total of 200 people can use them in the Rusifa and Irbid areas combined (each bus covering two routes). This means that the total subsidy available to operation of bus service is calculated by multiplying 10JD/person·month by 200 people. The total thus obtained is 2,000JD per month.
- (iii) The present running distance is 450 km per day (9,000 km per month) for the Rusifa center and 142km per day (2,840 km per month) for the Irbid center, totaling 11,840km per month.
- (iv) The fuel cost is estimated by applying the fuel economy of 0.1JD per liter and 10 km per liter to the total running distance of 11,840 km per month.

The bus service will consume approximately 1,200 liters of fuel per month, and the fuel cost will amount to 120JD per month.

- (v) Finally, the labor (driver) cost is 100JD per driver per month, totaling 400JD per month for four vehicles.
- (vi) Thus, when the fuel and labor costs are subtracted from the total subsidy of 2000JD per month, a monthly surplus of 1,480JD per month can be reserved for vehicle maintenance. Thus, the cost analysis indicates that the four buses can be operated on a continuous basis.
- (vii) The Rusifa Vocational Rehabilitation Center has a car maintenance course and is capable of performing periodic checks and minor repair.

Under these assumptions, the use of new buses can be expected to have several major benefits, as summarized below.

First of all, the Rusifa Vocational Rehabilitation Center is currently relying on the bus service operated by the school for the deaf, but unfortunately its students can use the school buses only when seats are available and the bus is running the correct route. At present, 40 students use the bus service operating on five routes. If two new buses are put into service, an additional ten students can be transported, and the new buses can be operated on the most appropriate routes to get the students home. Thus, the Rusifa center can accept disabled persons who cannot use public bus service.

**Table 2-9 School Bus Operation Plan for the Rusifa Vocational Rehabilitation Center**

Present				After improvement			
Bus route	Bus stop Nos. (Appendix 6-2)	Number of passengers	Time required	Bus route	Bus stop Nos. (Appendix 6-2)	Number of passengers	Time required
1		7	1 hour	1		23 (2)	1 hour 30 minutes
2		8	50 minutes				
3		12	1 hour 30 minutes	2		17 (8)	1 hour 40 minutes
4		7	40 minutes				
5		6	40 minutes				
Total		40		Total		50	

On the other hand, the Irbid Vocational Rehabilitation Center serves five bus routes using a minibus, requiring some students to wait for more than an hour before each leg of their commute to and from the center. For these students, the commute time takes more than two hours each way. The minibus (made in Japan) now in use has already run over 300,000 km, mainly on bumpy or dirt roads. The vehicle discharges profuse exhaust fumes and frequently breaks down, so it is clearly time for a renewal. If two new buses are used, the students will be spared a great deal of stress and frustration as the total waiting time for their commute will be reduced by more than two hours. Also, based on the available bus routes and travel time, an additional 60 students can be transported, which will make it possible to provide educational opportunities to persons with much more challenging disabilities.

**Table 2-10 School Bus Operation Plan for the Irbid Vocational Rehabilitation Center**

Present			After improvement		
Bus route	Number of passengers	Time required	Bus route	Number of passengers	Time required
1	1	12	1	1	12 (13)
	2	11		2	11 (14)
	3	13			
	4	4	2	1	13 (12)
	5	25		2	4 (21)
Max. Waiting Time		1 hour 50 minutes	Max. Waiting Time		30 minutes
Total		65	Total (Increase of Passengers: 60)		65

In addition to the present students, new buses will benefit potential recipients of the centers' service. The following table shows geographical distribution of disabled persons between 14–40 years old living in the areas serviced by the school bus.

**Table 2-11 Geographical Distribution of Disabled persons in and around Irbid**

Area	Number	Area	Number
Irbid	104	Dir Abu Said	39
Ramtha	124	Al Tayba	32
Al Huson	46	Kufur Asad	18
North Al Mazar	63	Bany Kananew	94
Total		520	

Source: Ministry of Social Development

**Table 2-12 Geographical Distribution of Disabled persons in and around Rusifa**

Area	Number	Area	Number
Amman	495	Biyrin	12
Zarqa	240	Al Hashemeyeh	25
Rusifa	374	Al Diar	18
Total		1,164 ( Zarqa city: 669 persons )	

Source: Ministry of Social Development

**Table 2-13 Geographical Distribution of Disabled Persons Who Can Attend Training Programs at the Vocational Rehabilitation Centers**

Area	CEDH (Age 15 ~ 39)	Ministry of Social Development (Age 14 ~ 40)	Note
Irbid	581	520	Suitable
Zarqa	620	669	Suitable
Amman	1,743	495	Suitable if the Rusifa schooling area is considered

Furthermore, the result of a study conducted by the Queen Alia Social Welfare Fund indicates that there are 3,874 disabled persons between 15 and 39 years old throughout the country. Based on the geographical distribution estimated by the Center for Early Detection of Handicaps (CEDH), it is estimated that there are 581 disabled persons residing in Irbid and its vicinities, 620 residing in Zarqa city, and 1,743 residing in Amman. Thus, the figures in Tables 2-11 and 12 (520 in Irbid and 669 in Zarqa city) appear to be good estimates. The figure for Amman (495 people) also seems sound, as these persons would presumably attend the Rusifa Vocational Rehabilitation Center. Based on these estimates, there will still be sufficient demand for the school buses at both centers after the present trainees graduate, hence the new buses will be fully utilized.

Table 2-14 summarizes the results of overall evaluation and unit requirements for the list of planned equipment.

#### (4) Planned equipment

Table 2-15 summarizes the major equipment required on the basis of the preset criteria, together with equipment specifications, intended use, and the number of units supplied per each center.

(5) Layout plan

Fig.2-1 presents the layout plan for major equipment based on the list of planned equipment (mainly those that require installation work).

Table 2-14 Necessity, Validity and Quantities of Required Equipment

Definitions	
- Study of Validity	: a - Rooms, instructors, etc. necessary for operation and maintenance have been kept. b - Costs of spare parts, consumables etc. for operation and maintenance are not expansive, and budget for those things is secure. c - The spare parts, consumables etc. are available in Jordan. d - Proper level of equipment for vocational training
- Study of Quantity (Mode of use)	: E - for practice of each student F - for practice of group (Fc: one unit per course, Fn: "n" = number of trainees in one group) G - for demonstration H - others
- Existing Equipment	: A - quantity of existing equipment in good condition B - quantity of existing equipment in poor condition C - quantity of existing equipment which is not working and to be repaired D - quantity of existing equipment which is not working and to be replaced
- Planned Quantity	: A - replacement of broken equipment B - replacement of scrapped equipment C - addition to existing equipment D - new supply

**1. Rusifa Vocational Rehabilitation Center**

Course	No.	Equipment	Quantity	Study of Necessity		Study of Validity					Study of Quantity		Existing Equipment				Planned Quantity				
				Subject/Practice	Judgment	a	b	c	d	Judgment	Mode of use	Necessary Quantity	A	B	C	D	A	B	C	D	Total
<b>1) Wood Working Course</b>																					
A	1	Band saw	1	cutting large wooden blocks	○	○	○	○	○	○	Fc	1	-	1	-	-	1				1
A	2	Wood working bench with vise	4	wood working	○	○	○	○	○	○	F5	4	-	-	5	-	4				4
A	3	Circular saw	1	cutting wooden plates and column	○	○	○	○	○	○	Fc	1	-	1	-	-	1				1
A	4	Planer	1	adjusting thickness of wooden plates	○	○	○	○	○	○	Fc	1	-	1	-	-	1				1
A	5	Bench drilling machine	2	drilling woods precisely	○	○	○	○	○	○	F10	2	-	1	-	-	1		1		2
A	6	Pedestal grinder	2	grinding steel parts etc.	○	○	○	○	○	○	F10	2	-	1	-	-	1		1		2
A	7	Wood working press	1	pressing wooden plates, gluing the plates	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
A	8	Router	1	carving wooden blocks and plates	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
A	9	Electric hand drill	2	drilling woods with a portable tool	○	○	○	○	○	○	F7	3	1	1	-	-	1		1		2

A 10	Electric hand grinder	2	smoothing edge of woods with a portable tool	○	○	○	○	○	○	F10	2	-	1	-	-	1	1	2
A 11	Electric sander	2	finishing surface of woods with a portable tool	○	○	○	○	○	○	F7	3	1	-	1	-	1	1	2
A 12	Electric hand planer	2	smoothing surface of woods with a portable tool	○	○	○	○	○	○	F10	2	-	-	-	-			2 2
A 13	Electric hand circular saw	2	cutting wooden column etc. with a portable tool	○	○	○	○	○	○	F10	2	-	-	-	-			2 2
A 14	Electric jig saw	2	cutting wooden plates with a portable tool	○	○	○	○	○	○	F10	2	-	-	-	-			2 2
A 15	Grinder	2	sharpening blade of wood working tools	○	○	○	○	○	○	F10	2	-	-	-	-			2 2
A 16	Chisel	1	making square holes	○	○	○	○	○	○	Fc	1	-	-	-	-			1 1
A 17	Lathe	1	carving round wooden pillar	○	○	○	○	○	○	Fc	1	-	-	-	-			1 1
A 18	Column drilling machine	1	drilling steel parts	○	○	○	○	○	○	Fc	1	-	-	-	-			1 1
A 19	Electric saber machine	6	carving wooden plates etc.	○	○	○	○	○	○	Fc	1	-	1	-	-	1		1
A 20	Side drilling and Sunta planer	1	planing of wood, horizontal drilling	○	○	○	○	○	○	Fc	1	-	-	-	-			1 1
A 21	Formika machine	1	carving surface and edge of woods with a portable tool	○	○	○	○	○	○	F3	7	-	1	-	-		6	6
A 22	Air compressor	2	cleaning and painting	○	○	○	○	○	○	Fc	1	-	1	-	-	1		1
A 23	Dust collector	1	collecting dusts	○	○	○	○	○	○	H	5	-	-	-	-			5 5
A 24	Spray gun	2	painting (included in A22)	x								-	-	-	-			
A 25	Tool wagon	4	storing tools during working	○	○	○	○	○	○	F10	2	-	-	-	-			2 2
A 26	Wood working hand tool set	10	wood working	○	○	○	○	○	○	F2	10	-	-	-	-			10 10
A 27	Rack		keeping tools etc.	○	○	○	○	○	○	H	3	-	-	-	-			3 3
<b>2) Leather Working Course &amp; Shoe Making Course</b>																		
B 1	Leather cutter	1	cutting leather for shoes, for mass production	x								-	-	-	-			
B 2	Leather puncher	1	making holes of leather for shoes	○	○	○	○	○	○	Fc	1	-	-	-	-			1 1
B 3	Leather sewing machine	5	sewing upper of shoes	○	○	○	○	○	○	F4	5	-	2	1	-	1	2	3
B 4	Knife splitter	1	adjusting thickness of leather	○	○	○	○	x	x			-	-	-	-			
B 5	Holding machine	1	holding edge of leather	○	○	○	○	x	x			-	-	-	-			
B 6	Napping machine	1	napping leather	○	○	○	○	x	x			-	-	-	-			
B 7	Stitching machine	4	sewing leather bags	○	○	○	○	○	○	F5	4	-	1	-	-	1	3	4
B 8	Last slipping machine	1	taking off wooden last from shoes, for mass production	○	○	○	○	x	x			-	-	-	-			
B 9	Bind roll machine	1	sewing sole	○	○	○	○	○	○	Fc	1	-	1	-	-	1		1
B 10	Dryer	1	dryer for cementing sole, for mass production	○	○	○	○	x	x			-	-	-	-			
B 11	Finishing machine	1	grinding and finishing shoes	○	○	○	○	○	○	Fc	1	-	-	-	-			1 1
B 12	Leather combing machine	1	skiving edge of leather	○	○	○	○	○	○	Fc	1	-	-	-	-			1 1
B 13	Working bench (for upper)	2 lots	leather working, making upper for shoes	○	○	○	○	○	○	F6	4	-	2	-	-	2	2	4
B 13	Working bench (for sole)		leather working, making sole for shoes	○	○	○	○	○	○	F2/G	11	-	6	-	-	6	5	11
B 14	Tool wagon	4	storing tools during working	○	○	○	○	○	○	F4	5	-	1	-	-		4	4
B 15	Tool set for leather work	10	making leather bags	○	○	○	○	○	○	F2	10	-	-	-	-			10 10
B 16	Tool set for shoe making	10	making leather shoes	○	○	○	○	○	○	F2	10	-	-	-	-			10 10
B 17	Sole presser	1	pressing cementing sole	○	○	○	○	○	○	Fc	1	-	-	-	-			1 1
B 18	Heating cabinet	1	dryer for cementing sole	○	○	○	○	x	x			-	-	-	-			
B 19	Leather sewing machine zigzag (for bag)	4	sewing bags with zig-zag	x								-	-	-	-			
B 19	Leather sewing machine zigzag (for shoe)		sewing shoes with zig-zag	x									-	-	-	-		

B	20	Single needle cylinder bed machine	2	maintenance of upper of shoes	○	○	○	○	○	○	F10	2	-	-	2	-	2			2			
B	21	Single needle high speed lock stitch machine (for bag)	4	same function of B7, with high speed	x								-	-	-	-							
B	21	Single needle high speed lock stitch machine (for shoe)		same function of B3, with high speed	x									-	-	-	-						
B	22	Wooden last	1 lot	forming leather to make shoes	○	○	○	○	○	○	Fc	1	-	1	-	-	1			1			
B	23	Anvil	11	driving nails etc.	○	○	○	○	○	○	F2/G	11	-	-	-	-			11	11			
B	24	Rack		keeping tools etc.	○	○	○	○	○	○	H	2	-	-	-	-			2	2			
<b>3) Tailoring Course &amp; Sewing, Dress Making Course</b>																							
C	1	Sewing machine (for men)	6	sewing with home-type sewing machine (the first year)	○	○	○	○	○	○	F2.5	4	-	-	-	2	2		2	4			
C	1	Sewing machine (for women)	4	sewing with home-type sewing machine (the first year)	○	○	○	○	○	○	F2	5	-	1	-	4	4			4			
C	2	Industrial sewing machine (for men)	15 (6)	sewing with industrial sewing machine (the second year)	○	○	○	○	○	○	F2.5	4	-	-	4	-	4			4			
		- 1-needle lockstitch machine		- sewing straight	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1		
		- 1-needle needle feed lockstitch machine		- sewing of slippery materials	○	○	○	○	○	○	Fc	1	-	-	-	-					1	1	
		- 1-needle bottom & variable top feed lockstitch machine		- sewing with variable feed device	○	○	○	○	○	○	Fc	1	-	-	-	-						1	1
		- 2-needle 4-thread overlock machine		- sewing edge of cloth	○	○	○	○	○	○	Fc	1	-	-	-	-						1	1
		- Variable top feed overlock machine (rake-in type)		- sewing edge of cloth with variable feed device	○	○	○	○	○	○	Fc	1	-	-	-	-						1	1
C	2	- 1-thread high speed label attaching machine	(1)	- level attaching	○	○	○	○	x	x			-	-	-	-							
		- 3-needle double chainstitch machine with cloth puller	(1)	- sewing heavy-weight materials	○	○	○	○	○	○	Fc	1	-	-	-	-					1	1	
		Industrial sewing machine (for women)	4	sewing with industrial sewing machine (the second year)	○	○	○	○	○	○	F4	3	-	1	1	-	2		1		3		
		- 1-needle lockstitch machine		- sewing straight	○	○	○	○	○	○	Fc	1	-	-	-	-						1	1
- 1-needle needle feed lockstitch machine	- sewing of slippery materials	○		○	○	○	○	○	Fc	1	-	-	-	-							1	1	
- 1-needle bottom & variable top feed lockstitch machine	- sewing with variable feed device	○		○	○	○	○	○	Fc	1	-	-	-	-							1	1	
C	2	- 2-needle 4-thread overlock machine	(1)	- sewing edge of cloth	○	○	○	○	○	○	Fc	1	-	-	-	-					1	1	
		- Variable top feed overlock machine (rake-in type)	- sewing edge of cloth with variable feed device	○	○	○	○	○	○	Fc	1	-	-	-	-							1	1
		- 1-thread high speed label attaching machine	(1)	- level attaching	○	○	○	○	x	x			-	-	-	-							
C	3	Vacuum press (for men)	1	pressing clothes, for mass production	x								-	-	-	-							
		Vacuum press (for women)		pressing clothes, for mass production	x									-	-	-	-						
C	4	Electric cutting machine (for men)	2	cutting clothes	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1		
C	4	Electric cutting machine (for women)		cutting clothes	○	○	○	○	○	○	Fc	1	-	-	-	-						1	1
C	5	Steam iron and iron table (for men, complete type)	5	ironing clothes	○	○	○	○	○	○	F4	1	-	-	-	-				1	1		
C	5	Steam iron and iron table (for men, separate type)		ironing clothes (finishing)	○	○	○	○	○	○		4	-	-	-	-			2			2	



C	5	Steam iron and iron table (for women, complete type)		ironing clothes	○	○	○	○	○	○	F4	1	-	-	-	-				1	1
C	5	Steam iron and iron table (for women, separate type)		ironing clothes (finishing)	○	○	○	○	○	○	F4	4	-	2	1	-	1		1		2
C	6	Drawing set (for men)	2	drawing for tailoring	○	○	○	○	○	○	F2	10	-	5	-	-			5		5
C	6	Drawing set (for women)		drawing for dress making	○	○	○	○	○	○	F2	10	-	5	-	-			5		5
C	7	Working bench (for men)	2	tailoring	○	○	○	○	○	○	F6	4	3	-	-	-			1		1
C	7	Working bench (for women)		dress making	○	○	○	○	○	○	F6	4	3	-	1	-	1				1
C	8	Tool wagon (for men)	3	storing tools during working	○	○	○	○	○	○	F10	2	-	-	-	-				2	2
C	8	Tool wagon (for women)		storing tools during working	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
C	9	Tool set for tailoring (for men)	10	tailoring	○	○	○	○	○	○	E	20	-	8	-	-			12		12
C	9	Tool set for tailoring (for women)		dress making	○	○	○	○	○	○	E	20	-	10	-	-			10		10
C	10	Rack		keeping tools etc.	○	○	○	○	○	○	H	2	-	-	-	-				2	2
<b>4) Knitting Course</b>																					
D	1	Knitting machine	5	knitting with electric	○	○	○	○	○	○	F2.5	4	-	1	1	-	2		2		4
D	2	Manual knitting machine	15	knitting by manual	○	○	○	○	○	○	E	8	-	6	-	-	4		4		8
D	3	Linking machine	1	linking knit	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
D	4	Embroidery machine	2	making embroidery on knit	○	○	○	○	○	○	F5	2	-	-	-	-				2	2
D	5	Tool wagon	2	storing tools during working	○	○	○	○	○	○	F5	2	-	-	-	-				2	2
D	6	Tool set for knitting	12	knitting by hand	○	○	○	○	○	○	E/G	12	-	-	-	-				12	12
D	7	Rack		keeping tools etc.	○	○	○	○	○	○	H	1	-	-	-	-				1	1
<b>5) Hair Dressing Course</b>																					
<b>- for Women</b>																					
E	2	Hair dressing table for woman	2	showing figure during hair dressing	○	○	○	○	○	○	F2	5	3	-	-	-			2		2
E	3	Permanent dryer & processor	1	heating hair for permanent wave etc.	○	○	○	○	○	○	F2.5	4	2	-	-	-			2		2
E	4	Washing machine	1	washing towels etc.	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
E	5	Tool wagon	2	storing tools during working	○	○	○	○	○	○	F5	2	-	-	-	-				2	2
E	6	Hair dryer	2	drying hair	○	○	○	○	○	○	F2.5	4	-	1	2	-	2		1		3
E	7	Mirror	2	showing head from back or side	○	○	○	○	○	○	F5	2	-	3	-	-	2				2
E	8	Stock cabinet	1	keeping tools	○	○	○	○	○	○	H	1	-	-	-	-				1	1
E	9	Electric iron set	2	waving and straightening hair	○	○	○	○	○	○	F2.5	4	1	-	-	-			3		3
E	10	Model wig	1 lot	excise of hair arrangement	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
E	11	Massage machine	1	facial massage	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
E	12	Towel steamer	1	keeping steamed towels	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
E	13	Scissors sterilizing machine	1	sterilizing scissors etc.	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
E	15	Hair dressing chair for women	1	sitting models for hair cutting	○	○	○	○	○	○	F2	5	-	3	-	-			2		2
E	15	Hair dressing chair for women (for body ca		sitting models for massage	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
E	16	Instrument set	2	cutting and arranging hair	○	○	○	○	○	○	F2	5	-	3	-	-	3		2		5
E	17	Wash basin	2	washing hair	○	○	○	○	○	○	F5	2	-	-	-	-				2	2



G 18	Sealing iron	2	reforming plastic parts	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
G 19	Working bench with vise	2	working table	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
G 20	Tool wagon	2	storing tools during working	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
G 21	Cabinet	2	keeping tools	○	○	○	○	○	○	H	1	-	-	-	-			1	1
G 22	Tool set	4	making artificial organ	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
G 23	Welding machine	1	welding stainless steel parts	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
<b>8) Sports Instruments</b>																			
H 1	Soccer set	10	physical exercise (physiotherapy and recreation)	○	○	○	○	○	○	Fc	1	-	1	-	-	1			1
H 2	Badminton set	10	physical exercise (physiotherapy and recreation)	○	○	○	○	x	x			-	-	-	-				
H 3	Basket ball set	1	physical exercise (physiotherapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
H 4	Parallel bars	1	physical exercise (physiotherapy and recreation)	x								-	-	-	-				
H 5	Mattress	5	physical exercise (physiotherapy and recreation)	○	○	○	○	x	x			-	-	-	-				
H 6	Vaulting box	2	physical exercise (physiotherapy and recreation)	○	○	○	○	x	x			-	-	-	-				
H 7	Volleyball set	1	physical exercise (physiotherapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
<b>9) Physiotherapy equipment</b>																			
I 1	Tread mill	1	walking training	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
I 2	Quadriceps exercise	1	training of quadriceps	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
I 3	Electric stimulation	1	muscular massage with electricity	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
I 4	Cervical traction	1	traction of neck	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
I 5	Suspension room with accessories	1	stretching of arms and legs	○	○	○	○	○	○	Fc	1	-	-	1	-	1			1
<b>10) Musical Instruments</b>																			
J 1	Electric piano	1	musical exercise (music therapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
J 2	Electric musical keyboard	2	musical exercise (music therapy and recreation)	○	○	x	○	○	x			-	-	-	-				
J 3	Drums	1	musical exercise (music therapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
J 4	Amplifier unit	1	musical exercise (music therapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
J 5	Loud speaker	2	musical exercise (music therapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
<b>11) Book binder Course</b>																			
K 1	Gold binding machine	1	stamping cover	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
K 2	Punching machine	2	making holes for binding	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
K 3	Hydraulic press	1	pressing books	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
K 4	Hand tools	1	binding books	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
K 5	Paper guillotine	1	cutting paper	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
K 6	Wire stitching machine	1	binding books with wire	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
K 7	Electric stapler	1	binding books with stapler	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
K 8	Rack		keeping tools etc.	○	○	○	○	○	○	H	1	-	-	-	-			1	1

<b>12) Upholster Furniture Course</b>																				
L 1	Air compressor	1	fixing clothes to wood with pneumatic tool (stapler)	○	○	○	○	○	○	Fc	1	-	1	-	-	1				1
L 2	Industrial sewing machine	2	sewing furniture clothe	○	○	○	○	○	○	F5	2	-	2	-	-	2				2
L 3	Electric cutter	2	cutting sponge of sofa	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
L 4	Working table	3	furniture making	○	○	○	○	○	○	F5	2	-	-	3	-	2				2
<b>13) Piping Course</b>																				
M 1	Pipe threading machine	2	threading	○	○	○	○	○	○	F10	2	-	-	-	-				2	2
M 2	Pipe cutter	5	cutting pipes	○	○	○	○	○	○	F4	5	-	-	-	-				5	5
M 3	Pipe vise	5	holding pipes	○	○	○	○	○	○	F3	7	-	-	-	-				7	7
M 4	Pipe die set	5	threading with hands	○	○	○	○	○	○	Fc	1	-	-	-	-				1	1
M 5	Tapping drill machine	2	making holes, tapping	○	○	○	○	○	○	F10	2	-	-	-	-				2	2
M 6	Hydraulic pipe bender	2	bending pipes	○	○	○	○	○	○	F10	2	-	-	-	-				2	2
M 7	Pipe wrench	5	holding pipes by manual	○	○	○	○	○	○	F7	3	-	-	-	-				3	3
M 8	Flaring tool set	5	flaring pipes	○	○	○	○	○	○	F10	2	-	-	-	-				2	2
M 9	Electric hand drill	2	making holes with the electric tool	○	○	○	○	○	○	F10	2	-	-	-	-				2	2
M 10	Electric hand grinder	2	grinding pipes with the electric tool	○	○	○	○	○	○	F10	2	-	-	-	-				2	2
M 11	Hack saw	5	cutting pipes by manual	○	○	○	○	○	○	F4	5	-	-	-	-				5	5
M 12	Working bench	2	piping work	○	○	○	○	○	○	F10	2	-	-	-	-				2	2
M 13	Thread gauge set	5	measuring thread	○	○	○	○	○	○	F4	5	-	-	-	-				5	5
M 14	Tool set for piping work	10	piping work	○	○	○	○	○	○	F2	10	-	-	-	-				10	10
M 15	Rack		keeping tools etc.	○	○	○	○	○	○	H	2	-	-	-	-				2	2
<b>14) Teaching Instrument</b>																				
N 1	Screen	1	showing training video program	x								-	-	-	-					
N 2	Video projector	1	showing training video program	x								-	-	-	-					
N 3	Video camera	1	recording training	○	○	○	○	○	○	H	1	-	-	-	-				1	1
N 4	Video tape recorder	1	showing training video program	○	○	○	○	○	○	G	1	-	-	-	-				1	1
N 5	TV	1	showing training video program	○	○	○	○	○	○	G	1	-	-	-	-				1	1
N 6	Copy machine	1	making training and teaching aids	○	○	○	○	○	○	H	1	-	1	-	-	1				1
<b>15) Personal Computer for administration</b>																				
O 1	Personal computer for administration	1	managing data of trainees	○	○	○	○	x	x			-	-	-	-					
<b>16) Transportation busses</b>																				
P 1	Transportation busses	3	transportation of trainees	○	○	○	○	○	○	H	2	-	-	-	-				2	2
P 1	Transportation busses (with lift)		transportation of trainees including wheel chair	○	○	○	○	x	x			-	-	-	-					
<b>17) Double cabine pickup</b>																				
Q 1	Double cabin pickup	1	carrying materials and products, looking for jobs for trainees etc.	○	○	○	○	x	x			-	-	-	-					

## 2. Irbid Vocational Rehabilitation Center

Course	No.	Equipment	Quantity	Study of Necessity		Study of Validity					Study of Quantity		Existing Equipment				Planned Quantity				
				Subject/ Practice	Judgment	a	b	c	d	Judgment	Mode of use	Necessary Quantity	A	B	C	D	A	B	C	D	Total
<b>1) Wood Working Course</b>																					
A	1	Band saw	1	cutting large wooden blocks	○	○	○	○	○	○	Fc	1	-	1	-	-	1			1	
A	2	Wood working bench with vise	4	wood working	○	○	○	○	○	○	F5	4	-	-	-	4	4			4	
A	3	Circular saw	1	cutting wooden plates and column	○	○	○	○	○	○	Fc	1	-	1	-	-	1			1	
A	4	Planer	1	adjusting thickness of wooden plates	○	○	○	○	○	○	Fc	1	-	1	-	-	1			1	
A	5	Bench drilling machine	2	drilling woods precisely	○	○	○	○	○	○	F10	2	-	1	-	-	1	1		2	
A	6	Pedestal grinder	2	grinding steel parts etc.	○	○	○	○	○	○	F10	2	-	-	-	1	1	1		2	
A	7	Wood working press	1	pressing wooden plates, gluing the plates	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1	
A	8	Router	1	carving wooden blocks and plates	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1	
A	9	Electric hand drill	2	drilling woods with a portable tool	○	○	○	○	○	○	F7	3	-	1	-	-		2		2	
A	10	Electric hand grinder	2	smoothing edge of woods with a portable tool	○	○	○	○	○	○	F10	2	-	-	-	-			2	2	
A	11	Electric sander	2	finishing surface of woods with a portable tool	○	○	○	○	○	○	F7	3	-	1	-	-	1	1		2	
A	12	Electric hand Planer	2	smoothing surface of woods with a portable tool	○	○	○	○	○	○	F10	2	-	-	-	-			2	2	
A	13	Electric hand circular saw	2	cutting wooden column etc. with a portable tool	○	○	○	○	○	○	F10	2	-	1	-	-	1	1		2	
A	14	Electric jig saw	2	cutting wooden plates with a portable tool	○	○	○	○	○	○	F10	2	-	1	-	-	1	1		2	
A	15	Grinder	2	sharpening blade of wood working tools	○	○	○	○	○	○	F10	2	-	1	-	-	1	1		2	
A	16	Chisel	1	making square holes	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1	
A	17	Lathe	1	carving round wooden pillar	○	○	○	○	○	○	Fc	1	-	-	-	1	1			1	
A	18	Column drilling machine	1	drilling steel parts	x								-	-	-	1					
A	19	Electric saber machine	6	carving wooden plates etc.	○	○	○	○	○	○	Fc	1	-	1	-	-	1			1	
A	20	Side drilling and Sunta planer	1	planing of wood, horizontal drilling	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1	
A	21	Formika machine	1	carving surface and edge of woods with a portable tool	○	○	○	○	○	○	F3	7	-	1	-	-		6		6	
A	22	Air compressor	2	cleaning and painting	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1	
A	23	Dust collector	1	collecting dusts	○	○	○	○	○	○	H	5	-	-	-	-			5	5	
A	24	Spray gun	2	painting (included in A22)	x								-	-	-	-					
A	25	Tool wagon	4	storing tools during working	○	○	○	○	○	○	F10	2	-	-	-	-			2	2	
A	26	Wood working hand tool set	10	wood working	○	○	○	○	○	○	F2	10	-	-	-	-			10	10	
A	27	Rack		keeping tools etc.	○	○	○	○	○	○	H	5	-	2	-	-		3		3	
<b>2) Leather Working Course &amp; Shoe Making Course</b>																					
B	1	Leather cutter	1	cutting leather for shoes, for mass production	x								-	-	-	-					
B	2	Leather puncher	1	making holes of leather for shoes	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1	
B	3	Leather sewing machine	5	sewing upper of shoes	○	○	○	○	○	○	F4	5	-	-	-	-			5	5	

B 4	Knife splitter	1	adjusting thickness of leather	○	○	○	○	x	x			-	-	-	-				
B 5	Holding machine	1	holding edge of leather	○	○	○	○	x	x			-	-	-	-				
B 6	Napping machine	1	napping leather	○	○	○	○	x	x			-	-	-	-				
B 7	Stitching machine	4	sewing leather bags	○	○	○	○	○	○	F5	4	-	-	-	-			4	4
B 8	Last slipping machine	1	taking off wooden form from shoes	○	○	○	○	x	x			-	-	-	-				
B 9	Bind roll machine	1	sewing sole	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
B 10	Dryer	1	cementing sole	○	○	○	○	x	x			-	-	-	-				
B 11	Finishing machine	1	grinding and finishing shoes	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
B 12	Leather combing machine	1	skiving edge of leather	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
B 13	Working bench (for upper)	2 lots	leather working, making upper for shoes	○	○	○	○	○	○	F6	4	-	-	-	-			4	4
B 13	Working bench (for sole)		leather working, making sole for shoes	○	○	○	○	○	○	F4/G	6	-	-	-	-			6	6
B 14	Tool wagon	4	storing tools during working	○	○	○	○	○	○	F4	4	-	-	-	-			4	4
B 15	Tool set for leather work	10	making leather bags	○	○	○	○	○	○	F2	10	-	-	-	-			10	10
B 16	Tool set for shoe making	10	making leather shoes	○	○	○	○	○	○	F2	10	-	-	-	-			10	10
B 17	Sole presser	1	pressing cementing sole	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
B 18	Heating cabinet	1	dryer for cementing sole	○	○	○	○	x	x			-	-	-	-				
B 19	Leather sewing machine zigzag (for bag)	4	sewing bags with zig-zag	x								-	-	-	-				
B 19	Leather sewing machine zigzag (for shoe)		sewing shoes with zig-zag	x									-	-	-	-			
B 20	Single needle cylinder bed machine	2	maintenance of upper of shoes	○	○	○	○	○	○	F10	2	-	-	-	-			2	2
B 21	Single needle high speed lock stitcl machine (for bag)	4	same function of B7, with high speed	x								-	-	-	-				
B 21	Single needle high speed lock stitcl machine (for shoe)		same function of B3, with high speed	x									-	-	-	-			
B 22	Wooden last	1 lot	forming leather to make shoes	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
B 23	Anvil	11	driving nails etc.	○	○	○	○	○	○	F2/G	11	-	-	-	-			11	11
B 24	Rack		keeping tools etc.	○	○	○	○	○	○	H	2	-	-	-	-			2	2
<b>3) Tailoring Course &amp; Sewing, Dress Making Course</b>																			
C 1	Sewing machine (for men)	6	sewing with home-type sewing machine (the first year)	○	○	○	○	○	○	F2.5	4	-	-	-	-			4	4
C 1	Sewing machine (for women)	4	sewing with home-type sewing machine (the first year)	○	○	○	○	○	○	F2	5	-	1	-	3	3		1	4
C 2	Industrial sewing machine (for men)	15	sewing with industrial sewing machine (the second year)																
	- 1-needle lockstitch machine	(4 )	- sewing straight	○	○	○	○	○	○	F2.5	4	-	-	3	-	3		1	4
	- 1-needle needle feed lockstitch machine	(4 )	- sewing of slippery materials	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
	- 1-needle bottom & variable top feed lockstitch machine		- sewing with variable feed device	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
	- 2-needle 4-thread overlock machine		- sewing edge of cloth	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
	- Variable top feed overlock machine (rake in type)	(1 )	- sewing edge of cloth with variable feed device	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
- Variable top feed overlock machine (pul in type)	(1 )	- sewing edge of cloth with variable feed device	x									-	-	-	-				
- 1-needle chain stitch blindstitcher wit skip-stitch device	(1 )	- sewing with chainstitch	○	○	○	○	x	x				-	-	-	-				







E 12	Towel steamer	1	keeping steamed towels	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
E 13	Scissors sterilizing machine	1	sterilizing scissors etc.	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
E 14	Hair dressing chair for men	2	sitting models for hair cutting	○	○	○	○	○	○	F5	2	-	-	-	-			2	2
E 14	Hair dressing chair for men (for body care)		sitting models for massage	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
E 16	Instrument set	2	cutting and arranging hair	○	○	○	○	○	○	F2	5	-	-	-	-			5	5
E 17	Wash basin	2	washing hair	○	○	○	○	○	○	F5	2	-	-	-	-			2	2
<b>6) Word Processing Course</b>																			
F 1	Computer (for trainees)	6	training of word processing etc.	○	○	○	○	○	○	E	10	-	-	-	-			10	10
F 1	Computer (for trainer)		demonstration, making teaching aid etc.	○	○	○	○	○	○	G	1	-	-	-	-			1	1
<b>7) Sports Instruments</b>																			
G 1	Soccer set	10	physical exercise (physiotherapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
G 2	Badminton set	10	physical exercise (physiotherapy and recreation)	○	○	○	○	x	x			-	-	-	-				
G 3	Basket ball set	1	physical exercise (physiotherapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
G 4	Parallel bars	1	physical exercise (physiotherapy and recreation)	x								-	-	-	-				
G 5	Mattress	5	physical exercise (physiotherapy and recreation)	○	○	○	○	x	x			-	-	-	-				
G 6	Vaulting box	2	physical exercise (physiotherapy and recreation)	○	○	○	○	x	x			-	-	-	-				
G 7	Volleyball set	1	physical exercise (physiotherapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
<b>8) Physiotherapy equipment</b>																			
H 1	Tread mill	1	walking training	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
H 2	Quadriceps exercise	1	training of quadriceps	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
H 3	Electric stimulation	1	muscular massage with electricity	○	○	○	○	x	x			-	-	-	-				
H 4	Cervical traction	1	traction of neck	○	○	○	○	x	x			-	-	-	-				
H 5	Ergometer	1	training of legs	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
<b>9) Musical Instruments</b>																			
I 1	Electric piano	1	musical exercise (music therapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
I 2	Electric musical keyboard	2	musical exercise (music therapy and recreation)	○	○	x	○	○	x			-	-	-	-				
I 3	Drums	1	musical exercise (music therapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
I 4	Amplifier units	1	musical exercise (music therapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
I 5	Loud speaker	2	musical exercise (music therapy and recreation)	○	○	○	○	○	○	Fc	1	-	-	-	-			1	1
<b>10) Transportation busses</b>																			
J 1	Transportation busses	3	transportation of trainees	○	○	○	○	○	○	H	2	-	1	-	-	1		1	2
J 1	Transportation busses (with lift)		transportation of trainees including wheel chair	○	○	○	○	x	x			-	-	-	-				
<b>11) Double cabine pickup</b>																			
K 1	Double cabin pickup	1	carrying materials and products, looking for jobs for trainees etc.	○	○	○	○	x	x			-	-	-	-				



Table 2-15 Major Equipment List

	Name of Equipment	Specifications	Technical Level	Quantity			Use
				Rusifa	Irbid	Total	
Wood Working Course							
R-W-1 I-W-1	Band saw	table size:700mm or more x 800mm or more, table tilt:0 - 20 ° , cutting thickness:350mm or more, cutting width:650mm or more, motor:2.0kW or more, with safety cover	Standard	1	1	2	take a piece from large wood, mainly straight and curved cutting
R-W-4 I-W-4	Planer	automatic 1 side plane, planing width:500mm or more, material thickness: max. 250mm or more, feed speed: variable (no step) 5m/min. or less ~ 13m/min. or more, planing motor:3.5kW, feed motor:0.4kW, table up-down motor:0.2 ~ 0.4kW	Standard	1	1	2	planing upper surface of wooden plates to adjust thickness
R-W-7 I-W-7	Wood working press	panel size:1,200mm or more x 2,400mm or more, motor:1.5kW or more, pressure:approx.30ton	Standard	1	1	2	pressuring wood, gluing
R-W-8 I-W-8	Router	max. material thickness:140mm or more, spindle-table distance:150mm or more, table size:650mmx350mm or more, table up-down:max.90mm or more (foot pedal) 130mm or more (handle), spindle rotation:15,000rpm or more, motor:1.5kW or more	Standard	1	1	2	chamfering, trimming, corner rounding, slotting, drilling, cutting out, grooving, carving etc.
R-W-17 I-W-17	Copying Lathe	max. length:1,000mm or more, height of center: approx. 250mm from bed, spindle rotation: variable (no step) 400rpm or less ~ 2,000rpm or more, motor:1.5kW or more, with coping device	Standard	1	1	2	outer round cutting, making thread, tapering off, cutting round surface etc. i.e. carving wooden pillar
R-W-18	Column drilling machine	drill & tap, swing: approx. 500mm, max drill dia.:30mm or more, max. tap dia.: steel M16, cast iron M20 or more, spindle up-down:140mm or more, table up-down:500mm or more, spindle-bed distance: approx. 1m, motor:1.5kW or more, rotation:6 steps, table:400mm dia., height: approx. 1.6m	Standard	1	0	1	make holes on steel etc., and tapping
R-W-19 I-W-18	Spindle moulder	router spindle rotation: approx. 10,000rpm, table size:1,000x600mm or more, motor:4.0kW or more	Standard	1	1	2	chamfering, trimming, corner rounding, slotting etc.
R-W-20 I-W-19	Combination machine	max. planing width:350mm or more, plane table size:350mm or more x 1,600mm or more, mortise horizontal drill, drill table size: approx. 250mm or more x 300mm or more (slide: right-left 200mm or more, forward-back 100mm or more), motor: approx. 3kW or more (for planes and drill)	Manufacturer Standard	1	1	2	make flat surface with plane, and make mortises with mortise drill

Leather Working Course & Shoe Making Course

R-L-2 I-L-2	Leather sewing machine	1-needle needle feed lockstitch machine, for thick materials, horizontal rotary hook, electric roller presser, speed: max. approx. 3,000spm, pitch: up to 5mm, sewing table and chair	Standard	3	5	8	sewing upper of shoes
R-L-3 I-L-3	Stitching machine	1-needle unison feed lockstitch machine, for thick material, horizontal rotary hook, speed: max. 2,000spm, pitch: up to 8mm, presser foot lift:hand 10.5mm, knee 11.5mm, feed:2 ~ 5.5mm, thread trimmer, sewing table and chair	Standard	4	4	8	sewing leather bags
R-L-4 I-L-4	Sole stitching machine	stitch length:3 ~ 14mm, max. thickness:25mm, speed:120 ~ 150spm, motor: approx. 0.3kW, with base horn	Standard	1	1	2	sewing soles of shoes
R-L-5 I-L-5	Finishing machine	mill cutter x2, cone type grinder x1, 40mm width and 100mm width belt grinder(belt 1,650mmlength each), polisher(horsehair brush 240mm dia. x 60mm, lapping wheel 200mm dia. x 60mm), motor:2.9kW or more, with dust collector	Manufacturer Standard	1	1	2	grinding and polishing heels, polishing upper of shoes
R-L-10 I-L-10	Tool set for leather work	hammer, leather scissors, leather knife, pliers, punch, rivet die, files etc.	Basic	10	10	20	leather bag making
R-L-11 I-L-11	Tool set for shoemaking	hammer, leather scissors, leather knife, pliers, height measure for shoes, hammer arm, punch, rivet die, pliers for insole, files etc.	Basic	10	10	20	leather shoes making
R-L-13 I-L-13	Single needle cylinder bed machine	1-needle cylinder bed unison feed lockstitch machine, for thick materials, horizontal rotary hook, speed: max. 2,200spm, pitch: up to 5mm, presser foot lift:handle 8mm, knee 13mm, tape feed device, sewing table and chair	Standard	2	2	4	repairing upper of shoes

Tailoring Course & Sewing, Dress Making Course

R-S-1 I-S-1	Sewing machine	free arm, horizontal rotary hook, needle threading device, thread feeding device, thread trimmer, automatic button hole stitching, sewing pattern 60 kinds or more, embroidery (built-in 50 kinds or more), table & chair	Standard	8	8	16	sewing work with home-use sewing machine
R-S-2-1 I-S-2-1	1-needle lockstitch machine	for middle thick materials, horizontal rotary hook, speed: max. approx. 3,500spm, pitch: approx. up to 5mm, needle stroke: approx. 35mm, presser foot lift:hand approx. 5mm, knee approx. 13mm, sewing table and chair	Standard	7	7	14	sewing work with industrial sewing machine (straight stitch)
R-S-2-2 I-S-2-2	Needle feed lockstitch machine	horizontal rotary hook, speed:max. approx. 5,000spm, pitch:approx. up to 4mm, needle stroke: approx. 30mm, presser foot lift:hand approx. 5mm, knee approx. 13mm, sewing table and chair	Manufacturer Standard	2	2	4	sewing work with industrial sewing machine (slippery materials)

R-S-2-3 I-S-2-3	1-needle bottom & variable top feed lockstitch machine	horizontal rotary hook, speed: max. approx. 4,500spm, pitch: approx. up to 5mm, top feed :approx. up to 8mm, shirring device, thread trimmer, needle stroke: approx. 30mm, presser foot lift:hand approx. 5mm, knee approx. 13mm, sewing table and chair	Manufacturer Standard	2	2	4	sewing work with industrial sewing machine (variable feed device)
R-S-2-4 I-S-2-4	2-needle 4-thread overlock machine	2-needle 4-thread, speed: max. 7,000spm, press foot lift:Approx. 5mm, table & chair	Manufacturer Standard	2	2	4	sewing work with industrial sewing machine (edge of cloth)
R-S-2-5 I-S-2-5	Variable top feed overlock machine (rake-in type)	2-needle 4-thread, for extra thick materials, speed: max. 5,500spm, presser foot lift: approx. 3mm, table & chair	Manufacturer Standard	2	2	4	sewing work with industrial sewing machine (edge of cloth with variable feed device)
R-S-2-6 I-S-2-6	3-needle double chainstitch machine with cloth puller	for extra thick materials, with puller, speed: max. 3,500spm, pitch: approx. 4mm, needle stroke: approx. 33mm, presser foot lift: approx. 10mm, table & chair	Manufacturer Standard	2	2	4	sewing work with industrial sewing machine (chain stitch of heavy-weight materials)

#### Knitting Course

R-K-1 I-K-1	Knitting machine	needle:200 or more, pitch:3 ~ 4.5mm, needle selection: computer, pattern variation, color: 4kinds automatic selection, ribbing attachment	Standard	4	3	7	knitting with electric knitting machine
R-K-2 I-K-2	Manual knitting machine	needle200 or more, needle selection: punch card, pattern variation, color: 4kinds automatic selection, ribbing attachment	Basic	8	10	18	knitting with manual knitting machine

#### Word Processing Course

R-C-1 I-C-1	Computer (for trainees)	PentiumIII 800MHz or equiv., memory:128MB, HD:20GB, CD-R/RW, stereo speaker, Arabic-English keyboard, mouse, Arabic-English OS, LAN board, word processing and spreadsheets software, 17" CRT, table and chair	Standard	10	10	20	exercise of word processing etc.
R-C-2 I-C-2	Computer (for trainer)	PentiumIII 800MHz or equiv., Memory:256MB, HD:40GB, CD-R/RW, stereo speaker, Arabic-English keyboard, mouse, Arabic-English OS, LAN board, word processing and spreadsheets software, OCR, 17"CRT, table and chair, hub, UPS, scanner, laser printer	Standard	1	1	2	demonstration by trainer at word processing course, and making educational aids

#### Artificial Organ Course

R-A-4	Carving machine	carving motor: approx. 1.0kW, rotation: changeable approx. 1,500rpm, approx. 3,000rpm, emergency stop switch, dust collector	Standard	1		1	carving plastic parts etc.
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R-A-11	Industrial sewing machine	1-needle postbed lockstitch machine, for thick materials, horizontal rotary hook, motor driven roller presser, thread trimmer, speed: max. approx. 2,200spm, pitch: up to approx. 4mm, presser foot lift: hand approx. 7mm, knee approx. 10mm, sewing table and chair	Standard	1		1	sewing leather parts
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Physiotherapy equipment

R-T-1 I-T-1	Tread mill	moving belt: approx. 1,500mm length, speed: approx. 0.3 ~ 11km/h, tilting :0 ~ 25%, hand rail (both sides, height adjustment) indication of load, speed etc.	Standard	1	1	2	walking training and evaluation
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Book binding Course

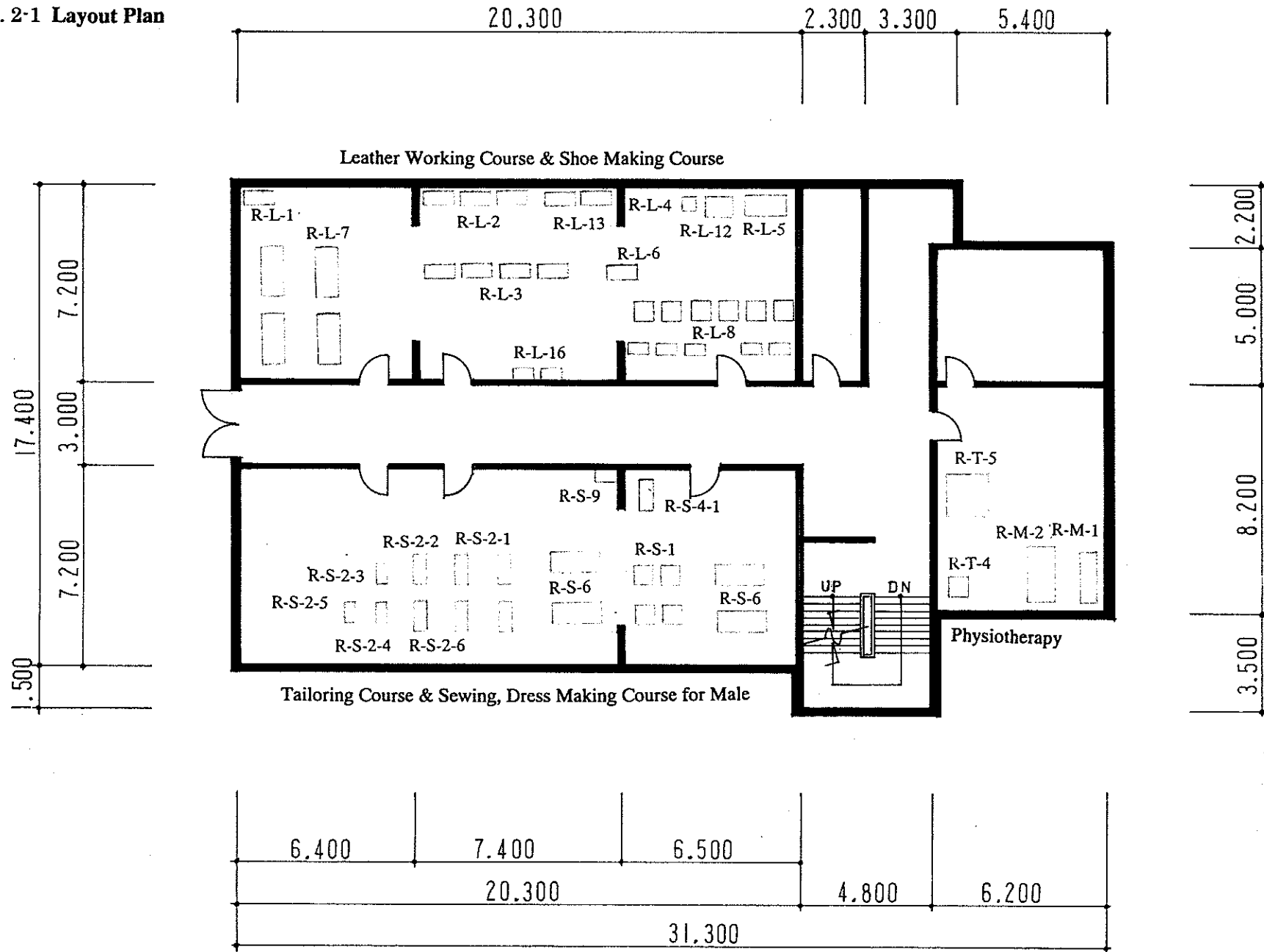
R-B-6	Wire stitching machine	speed: approx. 200spm, table size: approx. 700x250mm, sewing thickness:25mm or more	Standard	1		1	book binding with wire
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Transportation busses

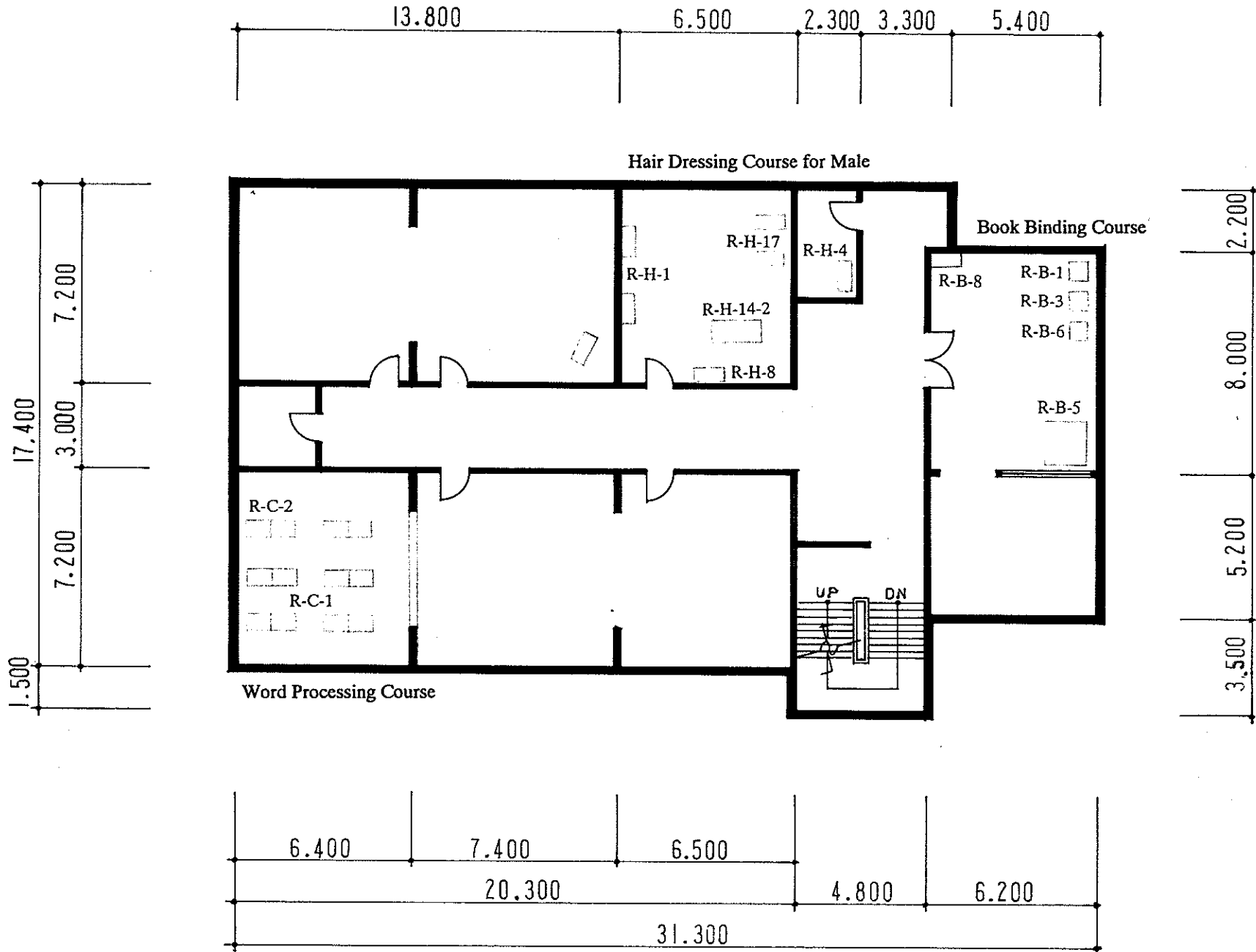
R-V-1 I-V-1	Transportation busses	21 persons (except folding seats), left side driver seat, right side door for passengers, length: approx. 7m, width: approx. 2m, height: approx. 2.6m, engine: diesel 90kW or more, exhaust cleaning device, airconditioner, curtain, safety belt for all seats	Standard	2	2	4	transportation of trainees
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Fig. 2-1 Layout Plan

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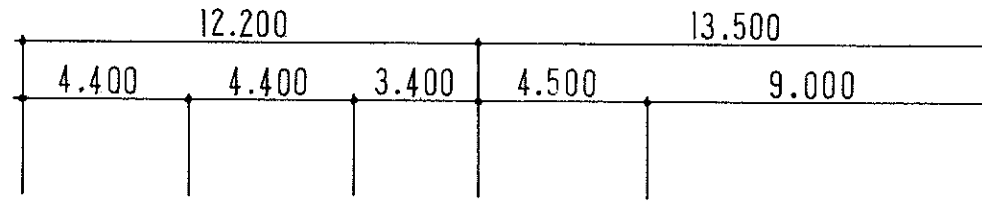


**Rusifa Vocational Rehabilitation Center - Building A : Ground Floor**

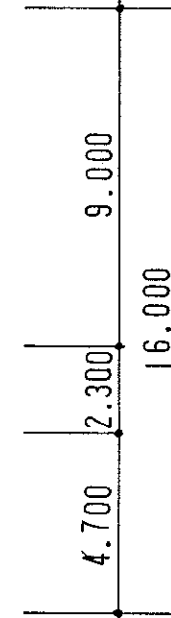
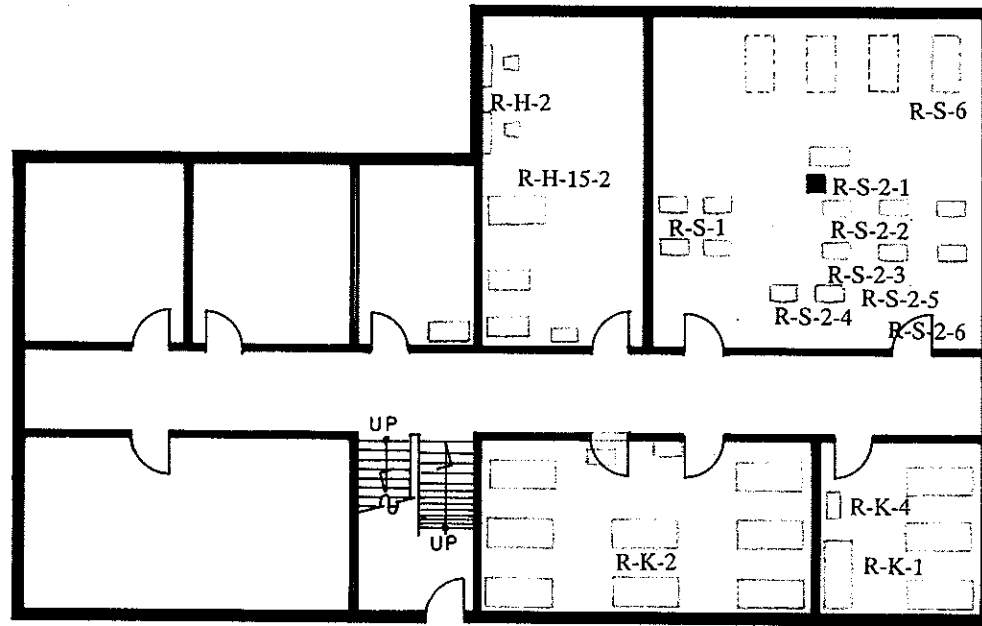
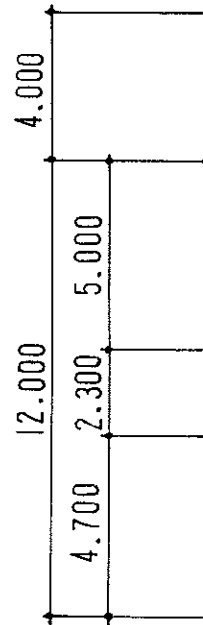


Rusifa Vocational Rehabilitation Center - Building A : 1st Floor

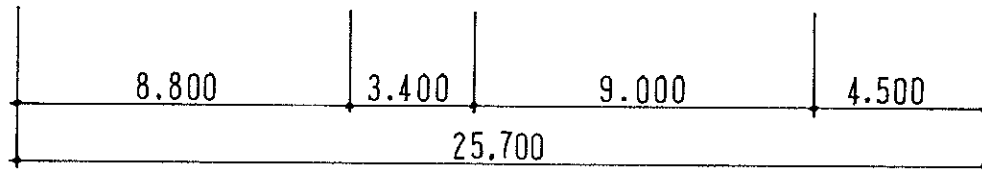




Hair Dressing Course for Female      Tailoring Course & Sewing, Dress Making Course for Female

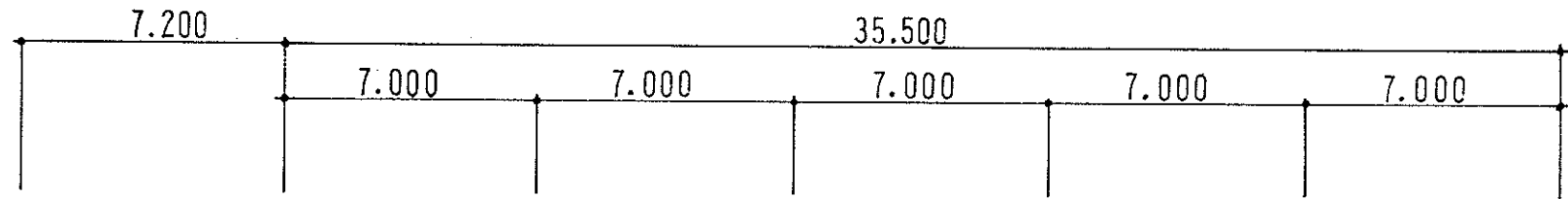
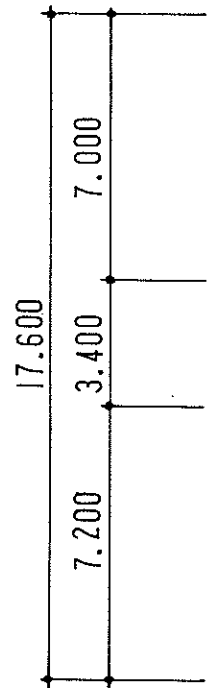


Knitting Course



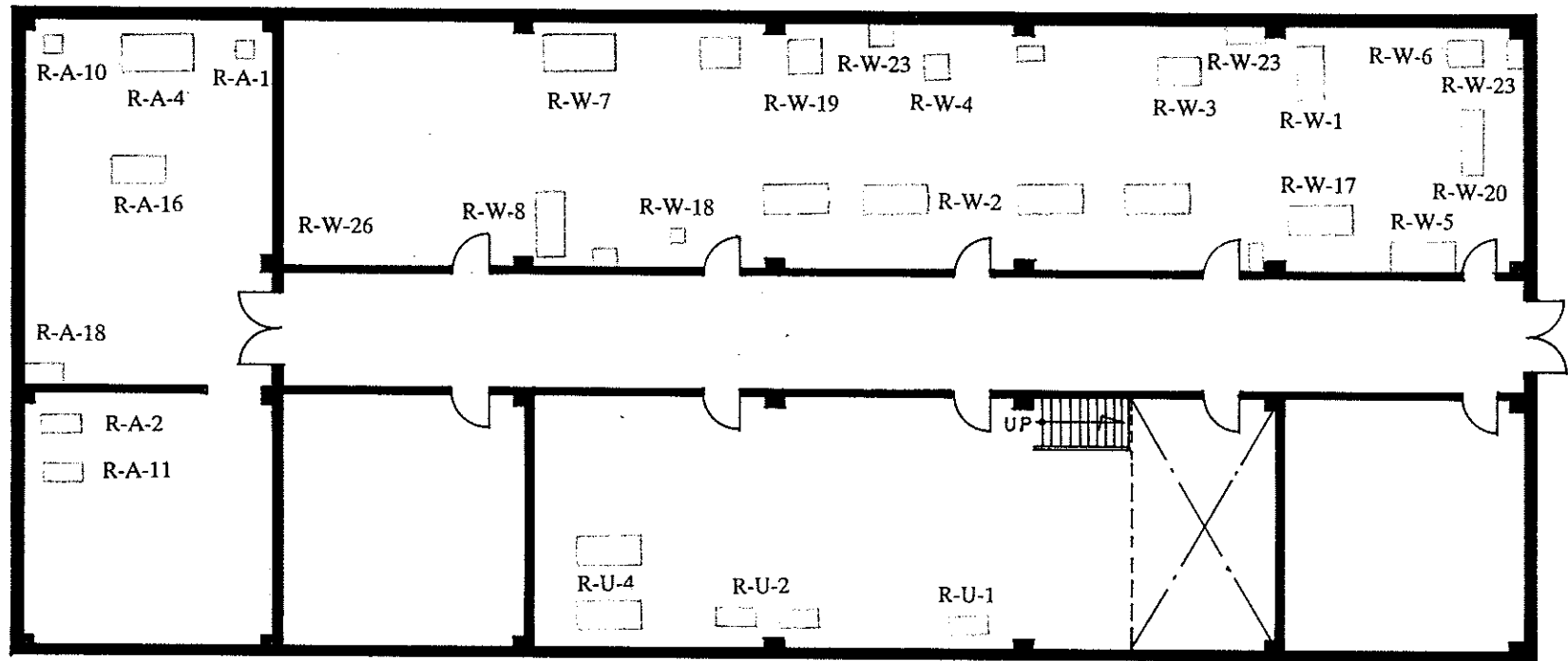
**Rusifa Vocational Rehabilitation Center - Building B**

2-46

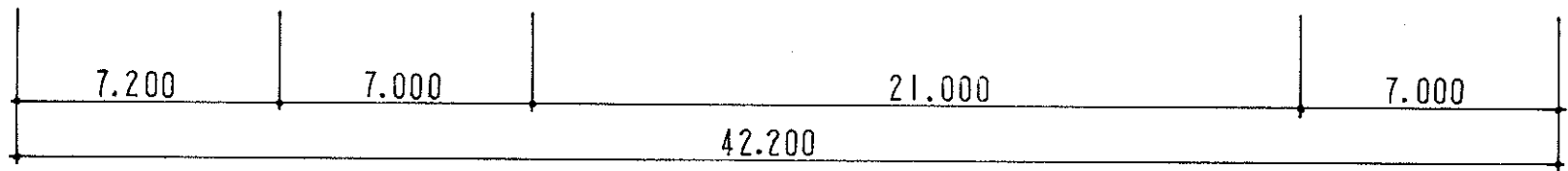


Artificial Organ Course

Wood Working Course

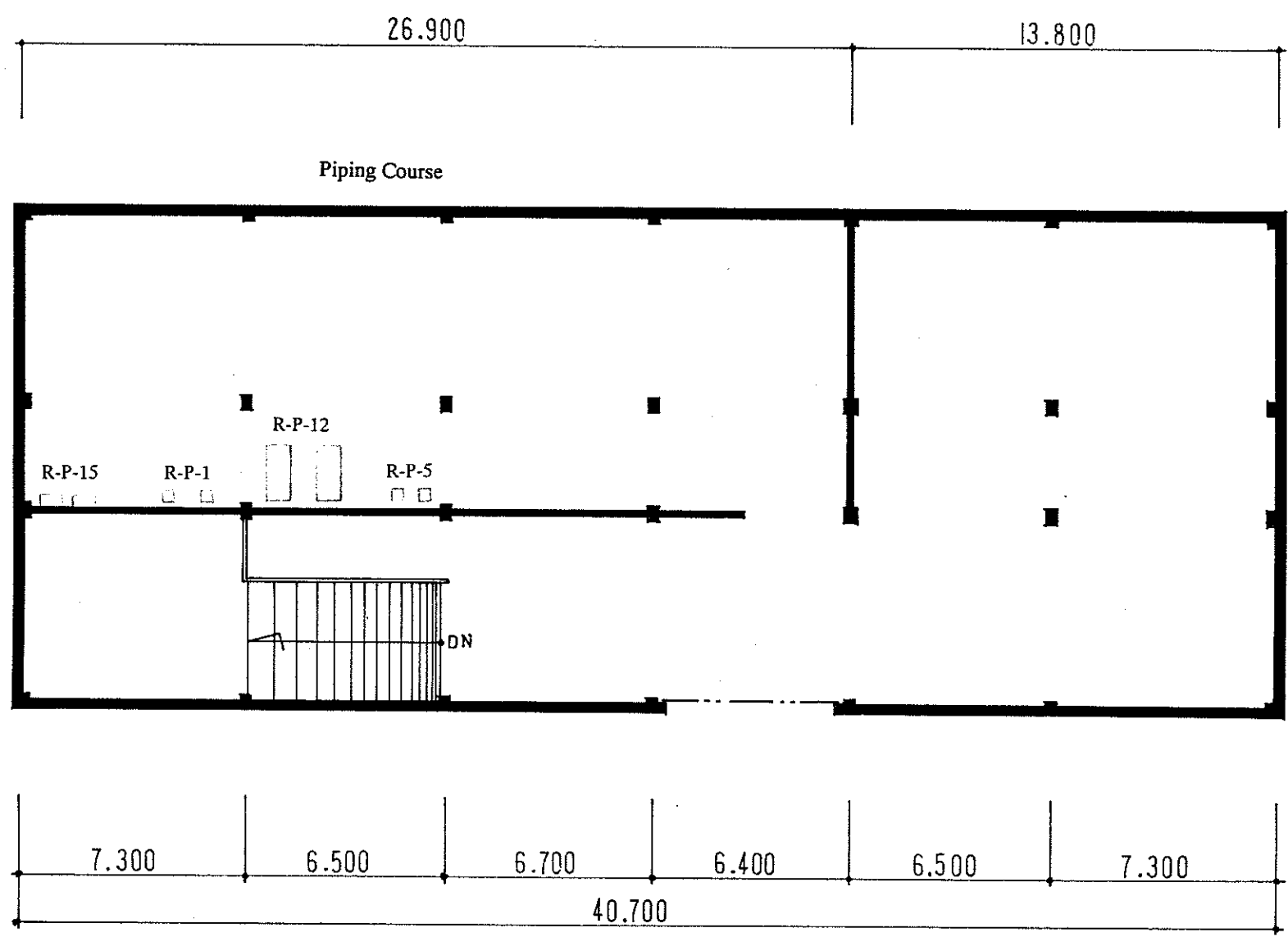
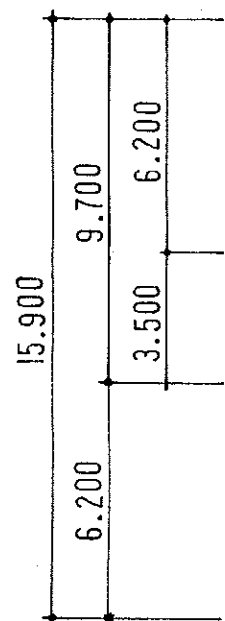


Upholster Furniture Course

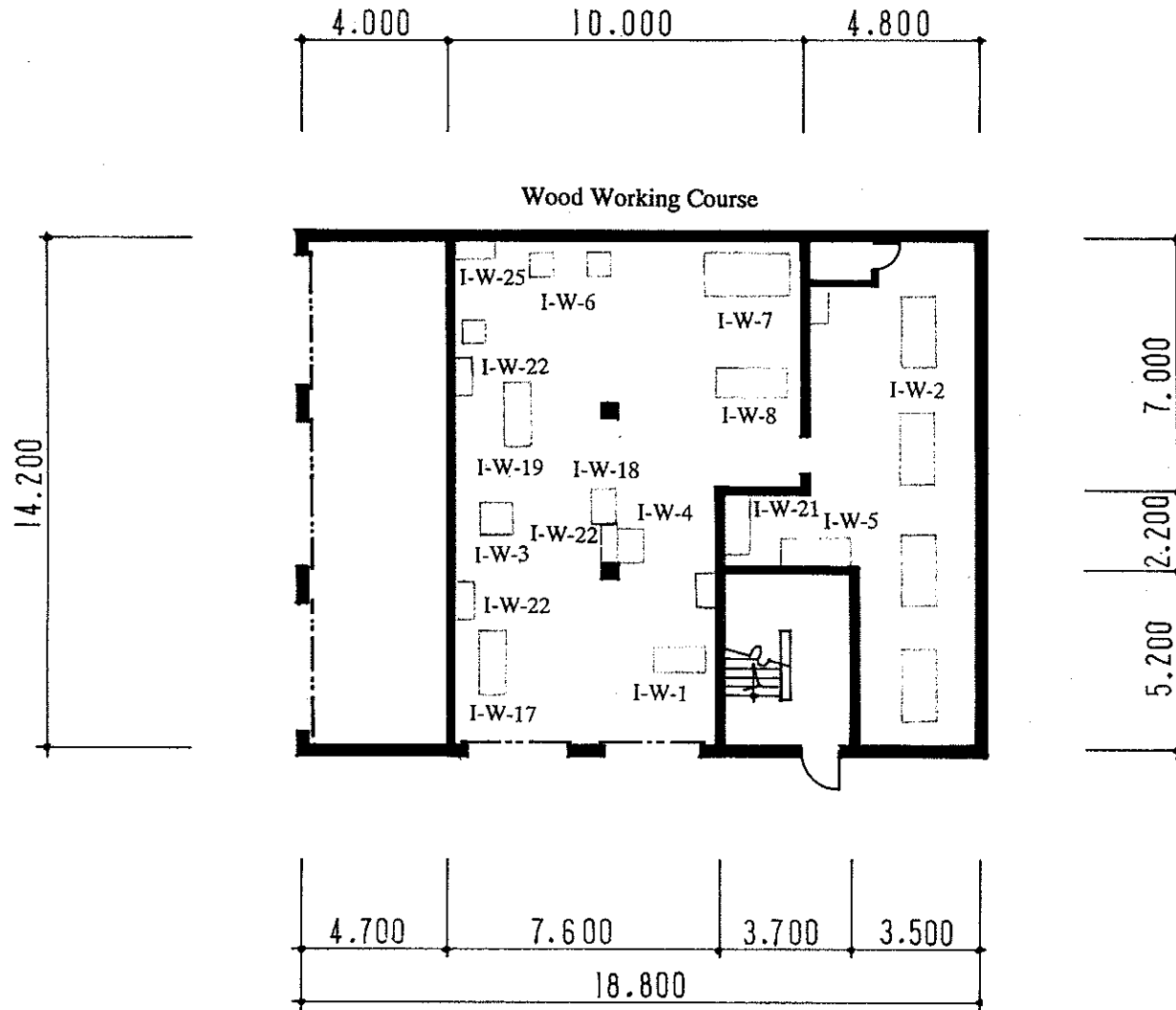


**Rusifa Vocational Rehabilitation Center - Building C**

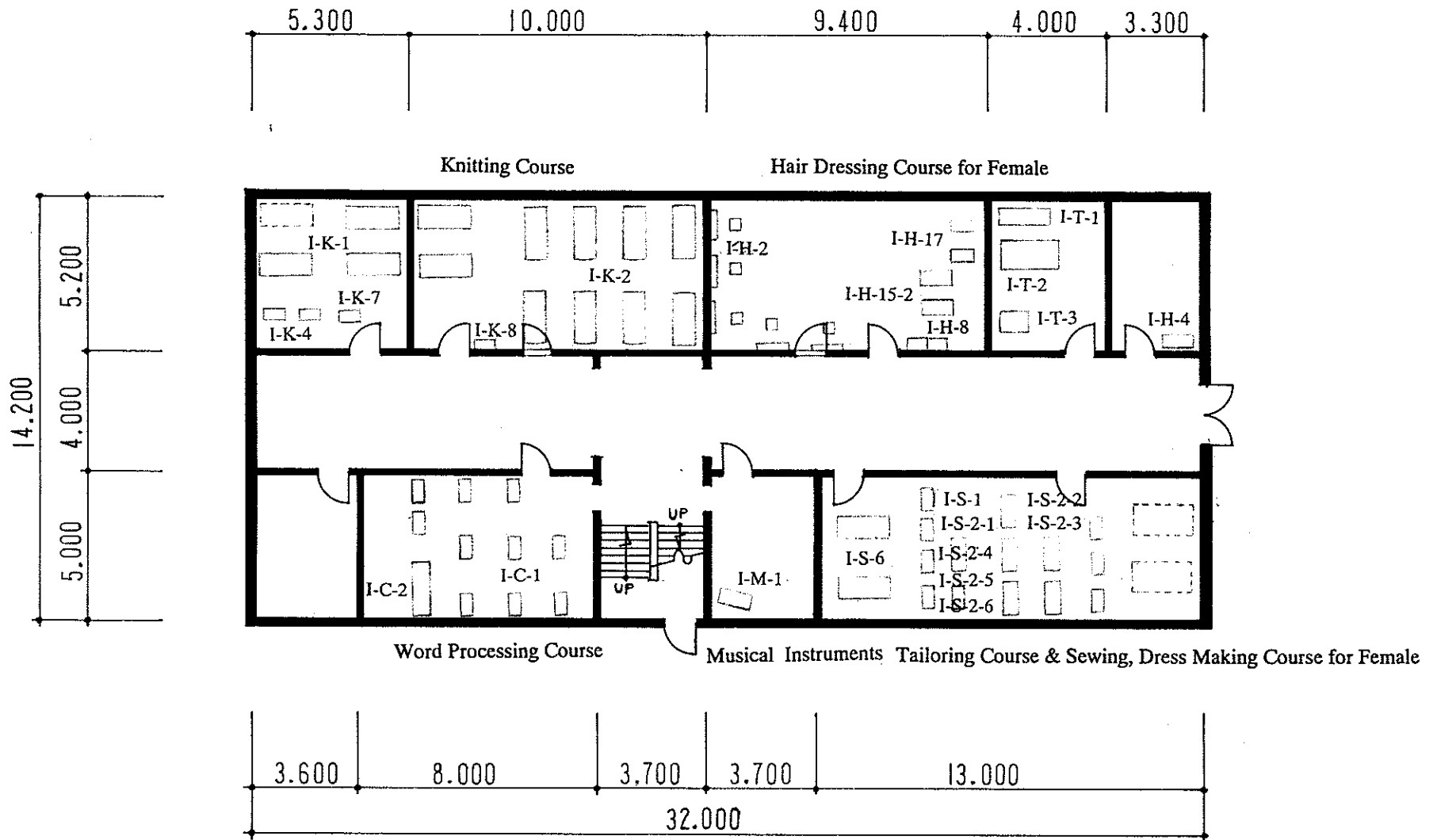
2-47



**Rusifa Vocational Rehabilitation Center - Building D**



**Irbid Vocational Rehabilitation Center - Ground Floor**



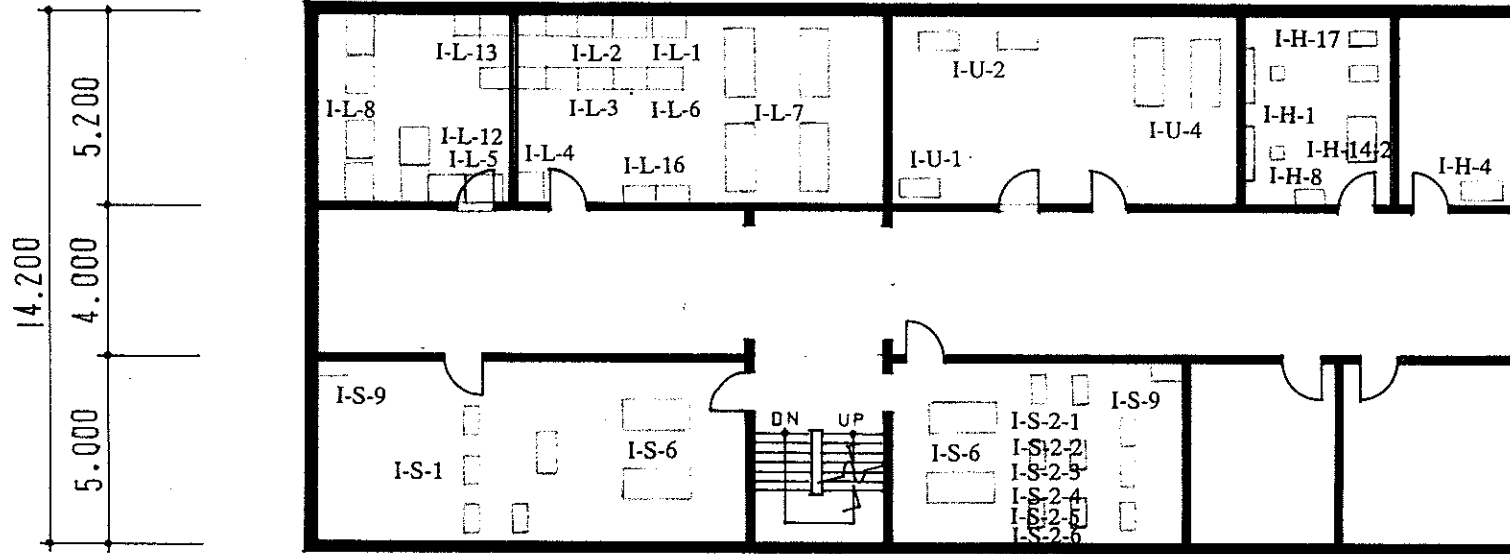
**Irbid Vocational Rehabilitation Center - 1st Floor**



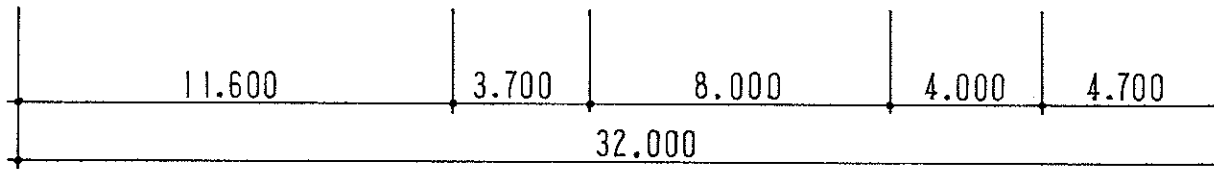
Leather Working Course & Shoe Making Course

Upholster Furniture Course

Hair Dressing Course for Male



Tailoring Course & Sewing, Dress Making Course for Male



**Irbid Vocational Rehabilitation Center - 2nd Floor**

2-50