E-ACADEMY OF BUILDING TRADES
EDUCATIONAL HANDBOOK

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FOREWORDS
TO THE HANDBOOK

The future of our historic built environment is in the hands – literally – of the many practitioners of traditional building crafts and trades, such as stonemasons, blacksmiths, and plasterers. But the resilience and integrity of many traditional building trades is under threat due to insufficient investment, lack of apprenticeships and cost pressures. The further or complete disappearance of such craftsmanship would result in great, unresolvable problems in the heritage sector as in such cases honest restorations or even maintenance would be extremely expensive or literally impossible. The need for the continuation of these skills and building technologies is also indubitably important in those rural areas where building in the traditional way is a contribution to saving the identical image and cultural identity of these lands.

'E-Academy of Building Trades' is a consortium of organisations across Europe concerned with preserving these crucial skills for current and future generations, encouraging everyone to get 'hands-on' in embracing traditional crafts and building trades. Multisectoral partners of the partnership conceived the following objectives to ensure the continuity of these traditional trades and the living form of this sort of craftsmanship:

- to assemble an open-access educational form, where distance learning and virtual classrooms are feasible;
- to conceive an innovative form of learning materials that is mainly based on the series of video tutorials assembled in a highly structured way to provide step-by-step pathways in learning the most important practical basics of the different trades;
- to make this platform visually attractive, applying a cross-platform design, being freely and openly accessible from anywhere through the internet.

The online training courses can be combined with different programmes:

- trainings offering workshop activities providing the essential practice of the hand skills - using ahead or after such practices;
- maintenance programmes for home-owners who could take care of their own properties, performing honest restorations on their own, with the help of the tutorial videos and guidance materials - which form is a very effective and economical way of preserving the values of the built environment in the urban scale.

Learn more about the educational values of our courses in this handbook and visit our online trainings at the **buildingtrades.eu** multilingual learning platform!

The Team of E-Academy

ADOBE & EARTH WALLS
VIDEO TUTORIALS

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The course offers an entry level insight to some of the technologies recognised for the purpose of building different types of adobe and earthen wall structures. Adobe and earth wall technologies are amongst the earliest building methods of humankind with a long history and specification over thousands of years. As the form of building they are fully sustainable solutions with zero carbon emission and energy efficient realisation. The selection of the traditional methodologies involves primarily those which are realistic even in modern times and there are still masters who are able to build houses using these kinds of technology. Though most of these methodologies are well-known in most parts of Europe and also worldwide, the forms of adobe and earth walls were selected based on the Hungarian practise evolved through the ages. The modules are connected with each other and one is based on some former ones, also they might be continued in later chapters to explain the theme in discussion in a more detailed way. We can summarise the structure of the course and these connections in the following way:

The creation of adobe as a building material is shown as part of **Module 1**. The process explained here provides basis for cob wall building, tutorial of the second chapter (**Module 2**), while as part of **Module 3** the user can learn the creation of adobe blocks from basically the same type of raw material. **Module 4** also shows the creation of blocks, but instead of adobe here raw earth is used for the creation of the building elements. In two further chapters (**Module 5 and 6**) the rules of masonry bonds are explained: in the first film the first layer of a block masonry, while in the second one there is special focus on the bonding methods of the wall end and the wall corner. As part of the course the masonry work is only shown using earth blocks, but the building technique shown fully applies to adobe blocks too. **Module 7 and 8** are about a completely different technology to the former ones: the rammed earth wall building, showing the processes in two parts (first video shows the first level of the formwork, while the second one a general level of it). **Module 9** then shows a special cutting process which is in generally more characteristic to the cob wall technology rather than the rammed earth wall, but as part of this course this technique is shown on the rammed earth wall built in the former two modules (7 and 8). Finally the plastering work introduced in **Module 10** is a method that can be applied on all former walls built before as part of the courses, shown in details on the surfaces of the earth block masonry wall.

Masters of the course: János Gáspár, István Lénárt, István Fridrich
Format of the modules: 10 video tutorials with voice-overs, subtitles and texts
Full playtime of tutorial videos: 1 hour 14 minutes and 34 seconds

1. PRODUCTION OF ADOBE

The tutorial film of the module shows how the cob (adobe) material is mixed in the pit using traditional technology. It is thoroughly explained how the soil is layered in 10-15 cm of depth and how the separate layers are watered and mixed with straw fibres. The tutorial also explains the correct method of the mixing process realised with feet.

2. BUILDING A COB WALL

This module explains in detail how the cob wall can be built using the traditional technology. The cob bundles are placed onto the developing wall with a fork, using the methods of good wall bonding. The tutorial shows the key movements with the pitchfork to prepare the cob bundles for the wall. A further technique of the pitchfork that can be learned from the module is the trimming moves during the development of the wall.

3. CREATION OF ADOBE BLOCKS

The tutorial film shows the creation process of the adobe blocks in four steps: 1. filling the mould with the cob mixture 2. removing the exceed material from the top 3. dropping the prepared brick out of the mould and onto the ground for a few weeks of drying time 4. turning the blocks so that all sides can be dried. The creating the cob mixture is the same as in Module 1.

4. CREATION OF EARTH BLOCKS

The methodology for producing pressured earth blocks is explained in this module. The machine required for the process is shown in detail by the film - together with the processes themselves: the filling of the mould, the usage of the handle and the proper way of drying the finished blocks.

5. ADOBE CREATION FOR COB WALL

Masonry prepared with earth blocks is shown in two module films. Module 5 shows the first layer of the bricks with special attention to the wall end and wall corner solutions besides the general layout of the 1.5 unit wall. At the beginning of the module's short film the preparation of the mud mortar is also explained. Throughout the film it is shown how to take care of the right angles, verticality and horizontality.

6. MASONRY OF EARTH BLOCKS - PART 2

The module is the continuation of the previous one. The second layer of the earth block masonry wall is shown upon Module 5's first layer. Through this process the rules of good bonding is explained: how to place the joints and how to carry out the wall end and wall corner layouts in the alternating rows.

7. RAMMED EARTH WALL - PART 1

The preparation of the rammed earth wall with formwork is discussed in this part of the series. The first task of the process is the assembly of the formwork together with the preparation of the sealing mud ropes. After this the module's short film shows the filling and ramming process of the first row of the wall.

8. RAMMED EARTH WALL - PART 2

The film of the module explains the preparation of a rammed earth wall's general row, talking about the importance of the separating layers between the different rows of the formwork and between the layers within the formwork. All other processes are shown again too, just as in the previous module: the assembly and disassembly of the formwork, the placement of the mud ropes and also the filling and proper ramming technique of the earth.

9. CUTTING OF THE EARTH WALL

The cutting of the rammed earth wall is shown in this part of the series: as part of the selected modernised technology the wall ends and 2-3 centimeters of the surface is removed with the help of a straightened-headed spade. The technique introduced is equivalent to the one that needs to be used on the surface of the Cob Wall, the praparation of which is explained in Module 2. The cutting moves are delivered partly from the top of the wall, partly from the sides.

10. PLASTERING

It is thoroughly shown in the short film of the module how to implement the mud plasterwork of the wall, starting from the sides of the surface and filling the middle parts afterwards. The techniques of applying the render on the wall with the different tools are explained in detail: from a mortar pan, with the help of a bucket trowel and then using a plasterer's trowel.

STRAW THATCHING
VIDEO TUTORIALS

STRAW THATCHING
VIDEO TUTORIALS

The course is made of two great parts, both explaining building methods of roofing. Furthermore even the raw building material is something that clearly connects the two, being rye straw in both cases.

The first 6 modules (Module 1-6) show the works required for the complete replacement of an old trodden straw roofing, a technology which is very rarely used nowadays, but the knowledge of this building methodology is still highly important so to be able to authetically restore a number of monument buildings of vernacular architecture. The structure of this first part is the following: **Module 1** depicts the demolishment of the old trodden straw roof, how the old material can be removed from the roof structure gradually. **Modules 2-5** then explain how the trodden straw roof is built on the different levels of the roof using more and more platforms till the level of the ridge so that the raw material can reach the place of working. The way of developing the trodden roof is shown in details in these modules from the soaking of the straw and the handing over process of the material through all platforms through the treading down process and adjustments of the straw bundles till the required further aligments like the paddling, the raking of the fibres on the surface and the trimming of the edge lines. **Module 6** shows the placement of the weightening poles onto the top of the ridge so to protect the roof structure from stormy weather conditions.

The second half of the course (Module 7-10) is about the repair works of a thatched roof made of rye-straw. The thatching technology used in the roof in need for repairs was a tied one resulting in a plain surface on the top in contrary to some other traditional solutions with characteristics of a stepped surface. **Module 7** shows the removal of the old and damaged parts which do not provide the required protection for the building anymore, while contributing to the further deterioration of the roof. This module also explains a few preparational works for the later repairs like the creation of the fascicles used for the roof and for building the ridge part in later modules. **Module 8** shows the common tying of the straw fascicles, filling the holes that remained after the removal of the damaged parts. Finally **Module 9 and 10** explains in detail the tying of the ridge composition and the fastening of the fixing rods at the leg of the ridge construction.

Master of the course: Sándor Török
Format of the modules: 10 pieces of video tutorials
with voice-overs, subtitles and text-form descriptions
Full playtime of tutorial videos: 1 hour 14 minutes and 34 seconds

1. DEMOLISHING THE OLD TRODDEN STRAW ROOF

Being the starting chapter of a 6-part series, the module introduces the trodden straw roof and shows the demolishment of an old version of this roof to give space for the new one. The process is being done with pitchforks, removing the straw in great bunches, starting from the top and processing towards the bottom. It is also important to fix the damages of the timber roof structure, before the new covering could be placed.

2. FIRST STAGE OF THE NEW TRODDEN STRAW ROOF

The first stage of the building process starts from the eaves, with the master standing upon it, distributing the straw material evenly both in depth and hight. The soaked straw material arrives from the ground using a pitchfork for every process. The master uses his feet to compress the roofing material and the pitchfork to keep the side of the roof even. The ramming process of the side is also explained in short, together with the trimming of the bottom side.

3. SECOND STAGE OF NEW TRODDEN ROOF

The second stage of the building process requires a platform as from the ground it is impossible to feed the work with material. The module shows in detail the soaking process of the straw with the help of a hose. The general building methods further-discussed are the same as in the earlier parts.

4. THIRD STAGE OF NEW TRODDEN ROOF

Part 4 of the Trodden Straw Roof series shows the work with a longer chain, now with already two platforms for delivering the roofing material to the top of the structure. The film dedicates special time for the ramming and raking process of the side besides the general processes of treading the straw by feet and distributing the material evenly around the perimeter of the roof.

5. RIDGE OF NEW TRODDEN STRAW ROOF - PART 1

Being the 5th part of the series in the replacement of an old trodden straw roof, Module 5 focuses on the last section of the building process. Besided the general methods of the building it is also repeated how to water the material before the work and how to ram the sides with a paddle.

6. RIDGE OF NEW TRODDEN STRAW ROOF - PART 2

The preparation and the placement of the weightening poles onto the ridge are the main topic of this part, which is the closing film of the series on the trodden straw roof. The film also shows the final adjusting works: raking and cleaning of the roof and the surrounding.

7. REPAIRS OF STRAW THATCHING - PART 1

Being the starting film of a 4-part series, Module 7 shows the removal of the damaged parts from a tied straw thatched roof and other preparational works like the creation of bundles both for the general part and for the ridge. The techniques for moving upon the roof for performing the repair work are also explained in detail.

8. REPAIRS OF STRAW THATCHING - PART 2

The general tying work is explained in detail in this module: how to create ropes from the fibres of the straw bundles and how to tie the bundles to the battens of the roof. The techniques of keeping the surface tight and durable are shown closely in the tutorial short film of the module.

9. REPAIRS OF STRAW THATCHING - PART 3

The preparation of the two-legged bundles required for the ridge is shown in Module 7, the first part of the series on the Repairs Of Straw Thatching. Now the tying process of these bundles is explained to the ridge of the roof. It is thoroughly explained and show how to tie the parts by forming ropes and weaving the structure together so that it can hold itself.

10. REPAIRS OF STRAW THATCHING - PART 4

The final module of the series on the repairs of a tied straw roof shows the processes of fixing the ridge part to the roof using walnut sticks tied to the structrue using thatching needles and wire. The application of the ties is thoroughly explained after which the roof only needs a cleaning from the unrequired parts remained after the demolition and building works.





ESTONIAN LOGBUILDING
VIDEO TUTORIALS

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VIDEO TUTORIALS

NGO Vanaajamaja (Old Times House) was born in 1998 as a nonprofit, educational organization. We are dedicated to establishing training programs, disseminating information, and generally serving as a center of Estonian traditional building and log house renovation for the professional and general public alike. Vanaajamaja is an accredited training and consultancy provider dedicated to Estonian built heritage. We provide training courses related to traditional log building and historical renovation. We regularly host master carpenters from all over the world to share their knowledge and skills. For over ten years now we have trained more than 500 people in Estonian traditional building.

It is our experience that not everybody starts hands-on building right after the training course. People need time to think and plan their own building projects. When the actual building then starts, after months or years, they might discover that some of the knowledge and skills acquired in the training have somehow disappeared. Therefore we have made a helpful tool for those who want to revive their knowledge. This set of films shows step-by-step the process of making a small log building with the dovetail corner notches. The set contains eight films starting with the preparation and starting the log building in the workshop and ending with the raising of the building in its actual location.

Master of the course: Margus Palolill, Mikk Mustmaa
Format of the modules: 8 pieces of video tutorials
with voice-overs, subtitles and text-form descriptions
Full playtime of tutorial videos: 2 hours 56 minutes 17 seconds

1. PREPARATIONS AND THE FIRST ROUND OF LOGS

Film gives an overview of the necessary preparations for starting a log building and making the first round of logs. It shows how to measure and place the leveling boards and how to start the first round of logs on the leveling boards.

2. PLACING A LOG WITH DOUBLE SCRIBING

Film introduces the double scribing of the dovetail notch. It shows how to find a suitable log, how to calculate the measures for a suitable log, how to level the log according to the log below. It shows how to scribe the dovetail notch and how to calculate the depth for both parts of the joint. It shows how to mark the wind breaking joint and how to place the pegs.

3. PLACING A LOG WITH SINGLE SCRIBING

Film introduces the dovetail notch with the single scribing technique. It shows how to find proper measure for the long groove. Master of the module Margus Palolill

4. WINDOW AND DOOR OPENINGS

Film shows how to make window and door openings in a log house. It shows how to calculate 3% for sinking due to drying of the logs. Second part of the film shows how to make the door and window bucks.

5. MARKING AND DISASSEMBLING

Film shows how to mark the reference measures of the binding log round and how to mark the diagonals of the binding log round. It shows how to number the log wall with openings and how to take the building down after the marking.

6. MARKING AND CUTTING THE RAFTER JOINTS

Film shows how to mark the height of the log round below the rafters, how to mark the cutting surface with the chalk line, how to calculate the location of the rafters and how to cut the rafter joint in the middle and at the end of the log.

7. RAFTERS

Film shows how to make rafters starting with the measuring and marking the rafter joints, marking the location of the truss, cutting the rafter joints and the truss joints. It then shows how to draw the rafter ends according to the stencil, how to cut the rafter ends and how to fit rafters together.

8. RAISING THE LOGBUILDING

Film shows how to raise the log building in its final location. It shows how to place the first round of logs, how to apply the hydroseal tape, how to place the moss for insulation between the logs and how to finish the door and window openings. We can also see an old tradition which demands that a coin is placed somewhere into the joint for good luck.

RENOVATION OF A VERANDA
VIDEO TUTORIALS

RENOVATION OF A VERANDA
VIDEO TUTORIALS

It is crucial to preserve old buildings because it is impossible to recreate them. We can make a copy of an old building but we cannot recreate old material. When we leave an old building and let it rot then it will be gone forever. Therefore we need to preserve and restore the old buildings as much as we can.

This course gives a step-by-step overview of a restoration project of a wooden veranda where old material has been preserved and conserved as much as possible. Every old building is unique with various damages. This set of films will not teach you how to restore all wooden verandas but it will give you an overview about all the necessary tasks and stages of the work, what materials to use etc – we give you one example of many possibilities.

The set of films starts with an overview of the original condition of the building, and how to assess the condition of the constructions. We will also see which parts were replaced, how to restore windows and inside doors. There are films about how to apply a seamed roof and what techniques to use to restore foundation. We also look at how to apply cellulose wool insulation and what interior works are necessary in restoration. Before making the decision to tear an old building down, think twice and knock it down only in case the restoration is impossible.

Master of the course: Andres Uus, Siim Marjamägi, Juhan Hint, Tarmo Narrusk, Sven Andreson, Hardi-Sander Luik, Robert Sule, Andres Kaarelson, Tauno Lepp
Format of the modules: 10 pieces of video tutorials with voice-overs, subtitles and text-form descriptions
Full playtime of tutorial videos: 1 hour 43 minutes and 11 seconds

1. OVERVIEW OF THE CONDITION OF THE BUILDING

The film gives an overview of the origin and history of the building, of the architecture of the veranda. We will see the original condition of the veranda and we will assess the types and ranges of the damages.

2. RESEARCH OF THE PAINT

The film shows how the research of the original paints is done on an old building. It assesses the different layers of the original paint on the facade. We will show how to open up the paint layers, what affects the preserved paint layers and how to evaluate the paints. Second half of the film shows how to clean and restore the facade boarding and wooden lace ornaments in the workshop. We also show how to make copies of the wooden lace ornaments.

3. OPENING UP THE CONSTRUCTIONS

The film shows how to open up the facade boarding, how to remove the old insulation, how to open the floors and the ceilings and how to assess the original materials on the veranda various spaces. We show how to plan the list of the tasks. When opening up the boarding, there might come some surprises that change the whole reconstruction project a little.

4. RESTORATION OF THE WOODEN CONSTRUCTIONS

The film starts with the preparation of the material that is needed to replace some of the constructions – we start with hewing the wood. Thereafter we show how to assess the extent of the construction that can be preserved, what parts of construction need to be renewed, what kind of material was used, what kind of joints were used etc. The film also shows how to make vertical posts and rafters. The film is concluded with a drawing of the construction that gives an overview of the joints that were used.




5. RESTORATION OF THE WINDOWS

The film introduces the window restoration step by step, it begins with the removal of glasses, removal and cleaning of the metal parts, assessment and removal of the paint layers. Thereafter we show how to choose material for the replacement of the construction, how to prepare and place the pieces that need to be replaced. The last stage of the restoration is the finishing: undercoating, filling, isolating the knocks and burls, replacing the glasses, applying the putty, painting and final cleaning the glasses. The film introduces the tools and materials suitable for old windows.

6. RESTORATION OF THE INTERIOR DOORS

The film shows how to measure the original doors and openings. We show how to assess the damages and what parts need to be replaced. Thereafter they show how to remove the paint. Thereafter the film shows how to assess what needs to be replaced. The doors are then filled with wooden putty and then sanded thoroughly. Metal details are cleaned and varnished. Before the final painting the knocks and burls need to be isolated, then the doors will be undercoated and painted. In the final part of the film we show how to plan the painting stages and we then introduce thoroughly the linseed oil paint that is suitable for the old building.

7. PLACING THE SEAMED ROOF

The film shows the tasks of applying the seam roof step by step – starting from applying the insulation and boarding and other preparation works. We introduce the materials and its characteristics and the way this kind of roof is applied historically. We show different tasks and different parts of the roof, how to make a tight and waterproof roof. We show how to seam and fold the roof.

8. RESTORING THE STONE FOUNDATION

The film shows how to restore the foundation of the veranda. We use the stones and the lime mortar. We show how to remove old stones and old loose mortar and filling, how to break the stones, how to fill the spaces between stones. We show the principles of stonemasonry and how to place the corner stones.present case, however, the raw material came from further afield.

9. INSULATION OF THE WALLS WITH THE CELLULOSE WOOL

The film introduces the cellulose wool as the suitable material for the insulation of the old houses. It shows how to apply it and what are the suitable layers of wind and vapor barrier.

10. INTERIOR WORKS

The film shows the conclusion of the restoration of the veranda. We show the placement of wooden floor boards in the second floor of the veranda. We show the layers of insulation on the ceiling and floor. We show how to preserve an old wallpaper in order to conserve it. We show how to reuse the old ceiling boards for the ceiling. We also show an old tradition of hiding all the names of the professional builders on a short floorboard under the floor.

BLACKSMITERY
VIDEO TUTORIALS

BLACKSMITHERY
VIDEO TUTORIALS

Blacksmithing is one of the oldest crafts in the world, without which we cannot imagine our daily life today. Blacksmiths were highly respected in all countries and at all times, in some nations even equated with wizards. And no wonder - after all, as if from nothing - from an iron ore, a dirty, gray piece of stone – a blacksmith was able to make masterpieces. Blacksmith's products always helped in the household: in the kitchen women cut with knives forged by blacksmith, men nailed horse hooves with horseshoes, rode into battles armed with forged weapons, houses were built with the help of blacksmith's tools and products, and so on. Recently, as people look back at old crafts, remember old values and look for exclusivity, they return to the original idea of this craft - the production of handmade and unique products.

Therefore, we invite you to learn the basics of the blacksmithing craft and to make the main blacksmith's household products!

The training provides theoretical and practical information for beginner blacksmiths. The content of the training consists of the theoretical basics of the craft (Part 1. Introduction), 9 lessons which show the making process of different metal items, thus providing a variety of knowledge and practical skills (Parts 2-10). 2 additional topics about decoration of metal products - decoration, ornamentation (Part 11), and renewal of old metal products (Part 12).

Master of the course: Juozas Tarailė
Format of the modules: 12 pieces of video tutorials
with voice-overs, subtitles and text-form descriptions
Full playtime of tutorial videos: 3 hours 55 minutes 13 seconds

1. INTRODUCTION

In this section you will get acquainted with the most important basics of blacksmithing: the properties and importance of metal, forge and fire, types of carbon, tools used in blacksmithing, safety recommendations. Much attention is paid to the properties of the metal and the specifics of work with it; the main principles of plasticity, heating, and forming, variety and properties of the metals used in blacksmithing are presented. You will find out what items are usually made by blacksmiths for daily use. You will also find a wide range of useful practical tips: where to get the necessary set of tools, where and what kind of metal can be purchased, what conditions are needed to install a forge, how to protect yourself and others.

2. PRODUCTION OF A NAIL

The production of nails is basically the ABC for the blacksmithing craft which helps to understand the basic practical principles of blacksmithing. All the principles of blacksmithing are used in the production of nails, which are also used in the production of other items. In this part, all stages of nail production are demonstrated step by step: metal heating, profile formation, drawing, formation of nail length and its head.

3. PRODUCTION OF TONGS

Tongs are one of the most important tools of a blacksmith. There are plenty of types of tongs, and this video teaches how to make small and universal tongs that would hold a slightly semicircular shape or a plate. A huge attention is paid to carbon steel and its properties, the main differences between iron and steel are indicated. This video shows the entire process of producing tongs step by step.

4. PRODUCTION OF HINGES

Hinges are a very common household product. The use of hinges, types, structure and fastening of hinges are presented in this video. This section teaches how to make linear hinges that can be used for light doors or smaller furniture doors. This video shows the entire process of producing all 3 necessary parts of the hinge step by step: the linear part which is attached to the door, the shaft, and the shackle which attaches to the door frame.

5. PRODUCTION OF A HANDLE

This video demonstrates the production of classic, traditional handles that are found in ethnographic material of Lithuania up to the 20th century. This video shows the

entire process of producing pull handles for doors or lids step by step.

6. PRODUCTION OF A HOOK

This video demonstrates the production of hooks for doors, furniture doors, lids, etc. Two types of production are demonstrated: the first is the production of a hook from a rod, and the second is the production of a hook from a thin stripe. Both production methods are presented step by step, revealing the specifics, advantages and disadvantages of each method.

7. PRODUCTION OF A LATCH

This video demonstrates the production of a door lock – a latch. A latch is a metal bar attached to a door or door frame that is bolted or pulled out. This video shows the entire process of producing the main parts of a latch: a metal bar with notches or pits for a key, 2 holding loops, and a key. The specifics and differences of working with massive and small details are revealed.

8. PRODUCTION OF A STAPLE

Staple is a fastener used to strengthen solid wood. The step-by-step process of producing staples is demonstrated. The process is simple and does not require specific additional skills or tools, but is necessary for those who work with wood and wood products. Iron is used to make this item.

9. PRODUCTION OF A LOCK

The production process of a door lock with a handle is demonstrated in this video. It is a traditional mechanism of door closing used until the 20th century in Lithuania. The mechanism works in this way: a handle, when pressed, raises the latch on the other side of the door and opens the door. The video explains how the use of this mechanism differs from the use of a latch or a hook. This video shows the production of all 3 main parts of this lock: the handle, the bit and the latch.

10. PRODUCTION OF AN AXE

This video demonstrates the production of an axe. An axe is a universal tool that can be used in household, woodworking, construction, warfare, etc. The video shows the production process of all three main parts of an axe: a butt which holds a haft, a bit which is the main part between a butt and blade, and blades with which the work is performed. 2 metals are used: iron for the main body and steel for the blades. Much attention is paid to metal strength, hardening, other new and complex processes and solutions of blacksmithing. Making an ax, like any other sophisticated tools or weapons, is a time-consuming job, so plan your time in advance as the process can take an entire day or even longer.

11. ORNAMENTATION OF A METAL ITEM

All products can be simple or decorated and ornamented. This video demonstrates 3 different ways of ornamentation: 1) decorative heads of nails or rivets; 2) decorative parts of handles; 3) decorative fasteners (hinges, fittings, etc.). This video also introduces new techniques related to ornamentation: twisting around the axis or moulding, punching, curling, and more.

12. RENEWAL OF A METAL ITEM

This video introduces ways to help renew old blacksmith products. The main problem of metal products is rust. Techniques and tools for rust removal as well as protection against further rusting are demonstrated. This video will provide many useful tips on how you can update old metal parts and give them both the original look and durability.

TILE STOVE BUILDING
VIDEO TUTORIALS

TILE STOVE BUILDING
VIDEO TUTORIALS

The tile stove not only radiates heat, but is also an impressive detail of the home interior, a real center of attraction. The first tile stoves in Europe were created in the 13th century, and they were built in Lithuanian manors from the 14th century. For a long time, luxuriously decorated tile stoves not only heated the homes of nobles, but were also an important symbol of wealth and status.

Today it costs thousands of euros to build a new and good tile stove. However, a greater value is to restore tile stoves that have been around for decades or centuries. It requires a lot of specific knowledge, meticulous and long work, but the house will be decorated with a real interior gem that perfectly performs its heating function.
Tile stoves are becoming more and more popular, more precisely - going back to fashion and surviving the second golden age. When restoring or even recreating them, it is important to preserve old traditions, follow the requirements of traditional craft heritage, and nurture the quality of materials and processes, thus ensuring the longevity and beauty of the tile stove.

This is what the tile stove restoration course in this project will tell and teach us!

The training provides theoretical and practical information for beginner potters who want to learn the basics of tile production and tile stove installation. Twelve different topics will present all necessary steps: production of a pot-shaped tile (Parts 1-6), production of lids for stove cleaning ducts (Parts 7-9), tile burning (Part 10), leaven ceramics (Part 11) and tile stove installation (Part 12).

Step by step, the course reveals each stage of production, gives practical and methodological advice, recommends the materials and tools that can be used, and suggests various technological alternatives.

Master of the course: Dainius Strazdas
Format of the modules: 12 pieces of video tutorials
with voice-overs, subtitles and text-form descriptions
Full playtime of tutorial videos: 2 hours 20 minutes 51 second

1. THROWING A POT-SHAPED TILE

The first part of the course introduces the main material - clay - and its properties, and provides basic recommendations on clay moisture, quality kneading, clay mass cutting, etc. The aim of the lesson is to learn how to throw a pot-shaped tile, which is the main component of the installation / reconstruction of a tile stove. In this part, the whole process of tile production is demonstrated step by step. The production of the tile will require prepared clay, a throwing wheel, gloves, water, wire (or strong thread).

2. MEASURING TOOLS AND THROWING PROCESS

The second part teaches the basic principles of measurement required to produce tiles of the required size, and the latter for the stoves of the required size. The physical properties of the clay and the change in size of the product during heating (burning) are presented, as well as the main tools that allow to calculate this important shift. The main principles of tile formation during the throwing are presented: thinning, elevation, etc.

3. THROWING A NECK FOR A POT-SHAPED TILE

The lesson presents in detail the steps of forming a tile's neck. The neck of the tile is an important part of the tile that is designed to engage the backs of the tiles. A new tool is used for this process – a tousle tool; its function and importance are introduced.

4. PRODUCTION OF A SMALL POT-SHAPED TILE

Production of smaller and narrower tiles is introduced. These tiles are part of the overall structure of the tile stove, which are produced in a specific shape to fit between the larger pot-shaped tiles. This part presents all technological solutions (size, shape, individual specific parts) and their production technology step by step.

5. COILING TECHNIQUE TO MAKE A TILE

This part introduces another method of tile production - forming a tile from coils on a hand-powered wheel. A hand-powered wheel has been used in the territory of Lithuania for more than 1000 years and is perfectly suitable to be used today. This part also explains how to make a hand-powered wheel yourself. The process of forming a tile from coils is also demonstrated step by step, which was more widely used until the 16th century, when throwing wheels became widespread in the area. This technique is important for the reconstruction of old tile stoves and for the work with archeological material.

6. BEATING A TILE MADE FROM COILS

The lesson presents the beating process of a tile made from coils, its functional importance, and a beating methodology. A curved wooden tool is used for the process, its production and functions are presented. You will also need: a wooden or iron knife, a piece of leather. The importance and methodology of beating joints and edge formation are emphasized.

7. PRODUCTION OF LIDS FOR DUCTS - PART 1

The lesson details the production process of the lids for stove cleaning ducts. This part of the stove is necessary to clean the stove from ash and soot, thus ensuring the proper functioning of the stove. A plate and a neck are made in order to make the cleaning duct and the lid. The first part of the topic demonstrates the production of a lid (plate) using a restored wooden press mold.

8. PRODUCTION OF LIDS FOR DUCTS - PART 2

The second part of the production of the lids for stove cleaning ducts demonstrates the process of attaching the neck to the plate. The neck is a part that enters the construction of the stove and allows to clean the duct from burning products (ash, soot). Technological processes of neck throwing, shaping, modeling to the plate are demonstrated, as well as the final works of the whole "mechanism": smoothing, ornamentation, etc. Production will require an additional drop of vegetable oil.

9. PRODUCTION OF LIDS FOR DUCTS - PART 3

This part will teach you how to make the last part of the lids for stove cleaning ducts - the handle. The processes of handle formation, ornamentation, attaching to the lid and finishing are demonstrated.

10. PREPARING AND LOADING A STOVE

High quality burning of tiles is one of the most important production processes. This part explains how to load the kiln with tiles correctly, as well as what wood to use for burning, how to light fire in the kiln and get the necessary flame for a high quality burning process. Much attention is paid to the various important steps of burning from lighting a fire to burning the tiles, advice is given on how to do it correctly and to keep the tiles from cracking during the burning.

11. DIPPING TILES INTO THE LEAVEN

Another important step waits after burning the tiles - dipping the tiles into the leaven. It is an archaic technology when a leaven closes the pores of the product, making the product waterproof, stronger and more resistant. This part demonstrates the process during which the tiles are removed from the kiln, dipped in leaven and water, cooled, and washed. Leaven production will require: water, oat flour, 2 containers for dipping tiles (leaven and water), sponges.

12. TILE STOVE INSTALLATION

Installation of a tile stove (construction, reconstruction) is the final step. This part demonstrates the tile stove installation process in real conditions. The authors and reconstructors of the project tell in detail about the technical and visual solutions adopted and adapted to today's needs, explain the important physical processes that are important for the functioning of the stove, explain all the processes that take place inside the stove during its use. The construction process of the stove is also demonstrated step by step: laying of tiles and formation of rows, masonry of tiles and other parts, various materials used in these processes are indicated. After the construction of the stove the next stage is demonstrated - the preparation of grout for covering gaps and the final finishing of the stove. Stove installation is a long, complicated process that requires a lot of experience and skills, but we hope that this lesson will help you not to be afraid and start learning this part.

STAINED GLASS RESTORATION
VIDEO TUTORIALS

STAINED GLASS RESTORATION
VIDEO TUTORIALS

As stained glass has endured a revival at the end of the 19th Century, its manufacturing process has remained largely unchanged until the present day. Stained-glass restoration uses the same techniques as did 19th Century stained-glass production, but they are completed by specific steps, like researching and surveying. This course focuses on the restoration of the stained-glass windows of the Roman-Catholic church in Târgu-Secuiesc, a complex process, beginning on-site and mainly completed in the workshop. The modules are presented by the restorer coordinating the stained-glass atelier in Floresti, Cluj, who has learned this trade both in the family and during formal training, and has acquired extensive experience. While presenting the technical and theoretical aspects, the restorer, accompanied by his fellow artisans, demonstrates in detail each step. Through 10 modules, the course follows the restoration process from the extraction of the panels from the church, their disassembling and reassembling, to their installing back in place. Module 1 deals with the removal of the stained-glass panels from the window-holes, their securing and transportation to the workshop. Module 2 focuses on the surveying of the panels` design, which will become the blueprint used during the different stages of the restoration. Module 3 is dedicated to the dismantling of the stained-glass panel, allowing for each component to be dealt with separately. Module 4 illustrates the cleaning and washing process, and the preliminary operations required. Module 5 concentrates on assessing the damage of the panel after it has been disassembled and identifying the components that have to be replaced. Module 6 shows how glass shards from a shattered section are joined together with adhesive, under UV light. Module 7 details the reconstruction of the missing fragments to be replaced, including the reproduction of the pattern and the identification of similarly colored mass-produced glass elements. Module 8 is concerned with the fabrication of the new lead came, through melting and laminating the old lead cames. Module 9 presents the last steps of the restoration process, in which the panel is reassembled with new lead came, according to the initial blueprint, and then soldered. Module 10 outlines the preliminary research - undertaken before the panels were removed from their original position - that includes historical inquiry, surveying and photographing of the stained-glass windows, identifying the types of degradations and the appropriate interventions, and testing some of the proposed solutions.

Master of the course: István Egri
Format of the modules: 10 pieces of video tutorials
with voice-overs, subtitles and text-form descriptions
Full playtime of tutorial videos: 1 hour 14 minutes and 34 seconds

1. EXTRACTING THE STAINED GLASS

The first module of this course begins with the extraction of the stained-glass windows of the Roman-Catholic church in Târgu-Secuiesc, an 18th-century church known to the locals as "Kanta".

2. TRACING THE LEAD CAME DRAWING

After a closer inspection of the stained-glass panels, the preliminary damage assessment is further elaborated: deteriorations that were not apparent from the start are now visible. One such case is the narrow glass fringe of the stained-glass panel, usually fixed into the window opening. The glass hem, made of cheap, unpretentious glass, has its origins in the Middle Ages, when stained-glass windows, demanding a serious investment on the part of the community or church, had to be easily removed and put back into place. As the tradition was carried into the middle of the 20th Century, the glass fringe was meant to be replaced, as it has been in the present case; this explains the contrast in quality with the adjacent material: manually painted glass.

3. REMOVING THE OLD LEAD CAME

After finishing the 1 to 1 scale drawings, the old lead came - worn because of "metal fatigue" and the effects of other mechanical, weather of chemical interventions - is removed. Firstly, the lead came is detached; afterward, the glass components are removed, washed and cleaned, and successively placed on the first drawing sheet, as each component is easier to locate one at a time.

4. CLEANING AND WASHING

At this stage, the panels` lead came has been removed sequentially, in six steps, so to maintain an easier control of the process. After the glass components, which have now been freed from their support, are soaked in soapy water, washed individually, and set to dry on a cotton rag, they are placed back on top of the second lead came network drawing. At this moment, new details emerge about the condition of the glass – fissures and cracks earlier concealed by the lead came, or by dirt and dust, clearly suggesting the next steps that have to be undertaken. It is now evident which are the pieces that can be glued together, which are the ones that only need cleaning, and that can be placed back in the new lead came as they are, and which of them are completely missing or deteriorated to a large extent, and are in need of replacement or further repairs. Such a component, probably shattered by a stone, will be reviewed at a later time.

5. PLACING THE STAINED GLASS BACK

As the washed stained-glass components are successively overlayed on the second of the two lead came drawing copies, elements that have suffered mechanical damage or have gaps, undergo complex interventions. Before reassembly, these pieces are partially pasted, joined together with lead came, while some fragments are replaced with newly baked painted glass.

6. GLASS PASTING TECHNIQUES

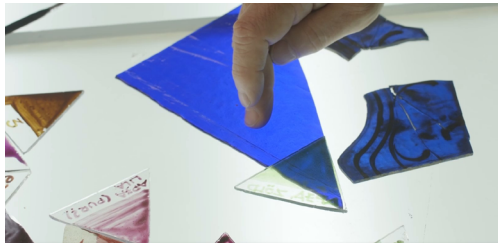
The disassembly process has exposed the actual state of the stained-glass components, revealing a large number of well-preserved elements that only need reassembling and a smaller number of damaged ones, either cracked, severely broken or lost. Such a completely missing part was covered with duct tape while on-site, to prevent water from entering the church. Another small element, shattered into eleven pieces, is extremely damaged.

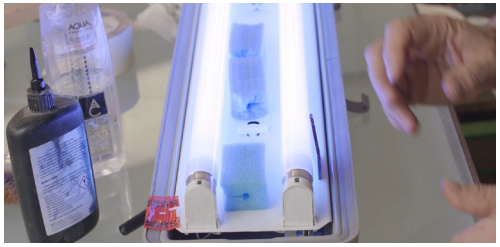
7. RECONSTRUCTION AND REPLACEMENT TECHNIQUES

The earlier mentioned element, broken into 11 fragments, calls for a different approach. With our first objective in mind - to keep as much original substance as possible - all the shards are bonded one by one until the final two pieces can be joined together with lead came. If - when connecting the pieces, light spots are present, or the crack is still visible, it means the contact surface is badly damaged, and smaller fragments still missing prevent a tight fit, so the element needs replacement entirely.

8. MELTING AND REMODELING THE LEAD CAME

As seen earlier, the disassembly of the stained-glass panels has been preceded by the surveying of the design. It has required separating the glass fragments and recovering the old lead cames. Since the latter cannot be utilized in their present condition, they are going to be melted, then recast into wands, and laminated in a two or three-phase process, similar to the one that produced the initial cames. Of course, newly-acquired lead will also be added, but the aim is to reuse the original material.





9. REASSEMBLY OF THE STAINED GLASS

By now, almost all the steps of the restoration process have been finalized. After every glass component has been either cleaned, glued, or replaced and the new lead cames have been produced, the panel is ready to be put back together again. This operation will employ the same techniques as 100 years before, so the stained-glass window will go back looking as it did when it was first manufactured.

10. TECHNICAL DOCUMENTATION

As before mentioned, the restoration process stands on a lengthy study of about 80 pages for the four windows, including an introduction to the history of the church building and a location analysis of the stained-glass components inside.

CLAY TILE PRODUCTION
VIDEO TUTORIALS

CLAY TILE PRODUCTION
VIDEO TUTORIALS

Tiles are essential to the image of historical buildings and sites, creating the Dachlandschaft – the scenery of the roofs - and representing an important component of local identity and heritage. This course gives an overview of the production process of manufactured tiles and bricks, nowadays used in restoration projects. Hence, the course focuses on some of the few artisans still practicing it, in the recently reestablished (2013) roofing workshop from Apoș, in the Saxon territory of Southern Transylvania – possibly the only one still employing exclusively traditional techniques in Europe. The endeavor has been initiated and supported by the Monumentum Association, an association comprising architects and restorers focusing on the preservation of rural heritage, whose members also contribute with the theoretical background for the course. The artisans introduce the practical steps to be undertaken, illustrating each operation, from the extraction of the raw material from the clay pit, to its processing, molding and modeling, drying, firing, and fixing in place.

Of the 10 modules, 8 focus on the manufacturing process itself, providing information regarding the optimal conditions, the amount of time required, the number of artisans involved, and their responsibilities. Module 1 is concerned with the characteristics of the clay found in the pit of Apoș, differentiating between traditional and industrial extraction. Module 2 describes the mixing process, carried out with the help of a one horse-powered pug mill. Module 3 details the operations entailed by tile molding: beating in the mold, cutting, and also focuses on the artisans working conditions. Module 4 is dedicated to mixing clay for bricks and modeling them, while Module 5 demonstrates the molding of the ridges. Module 6 presents the first part of the firing process – the slow burn, while Module 7 concentrates on the last phase of firing, the more intense burn. Modules 8 and 9 deal with theoretical aspects, explaining the historical context of the development of particular types of tiles and classifying them according to their provenance and characteristics. Module 10 exemplifies on-site the employment of the finished product, illustrating the mounting of the tiles on the eaves of a Saxon house currently restored by Monumentum Association through their project, the Monuments Ambulance. Thus, the course gives a comprehensive overview of handcrafted clay tiles.

Master of the course: Eugen Vaida
Format of the modules: 10 pieces of video tutorials
with voice-overs, subtitles and text-form descriptions
Full playtime of tutorial videos: 1 hour 14 minutes and 34 seconds

1. CLAY EXTRACTION

Tasting the clay is a method of detecting the presence of mineral salts, which give a specific taste, and which, in high amounts, bear upon the tiles` and bricks` behavior during thaw and freeze cycles. The amount of lime also has to be assessed, since it causes the fired products to crack in the kiln. Compared to an industrial process, which sometimes requires the clay mass to be mixed with the limestone, manual selection of clay allows for the limestone to be avoided before mixing. Moreover, manufacturing also allows for tiles that have cracked during firing to be singled out.

2. MIXING THE CLAY

The clay brought from the quarry is soaked in water in a pit next to the workshop and then put in the one horse-powered pug mill. The result is a fine dough or putty-like substance, suitable for molding. The mixture is then placed on the working table, where both bricks and tiles are modeled.

3. TILE MOLDING

The dough is first kneaded, then beat in - stuffed in the stencil to eliminate air pockets. Excess clay is removed, and the surface is cut with a flat piece of beech (a pat). Sand is sprinkled over to prevent it from sticking to the former - the wood plate that will support it when drying – and eventually cracking.

4. MOLDING THE BRICKS

The mix for bricks is obtained by mixing clay with water by foot, instead of a mixer, since the finished products don't have to be as smooth and sealed as tiles, as they are covered by plaster and less vulnerable to freezing and thawing. Thus, water is poured into the middle of a vat of clay, which is then dragged with a hoe and foot mixed.

5. MOLDING THE RIDGES

Ridges are made applying the same principle as with tile making. After mixing, the clay is brought to the working table, to the specialized artisans. The clay is beat into the (metal) stencil, leveled, sprinkled with sand, flipped, and put on a wooden former, where it is smoothed with a textile ribbon while wet. The wooden mold has a semi-ellipsoidal shape - the shape which the clay retains on its own after the removal of the mold. It's manufactured based on the principle of Gaudi's Hanging Chain - a principle used here empirically by the artisans. They sometimes joke saying that the former is shaped as a women's leg. Of course, the human silhouette might have served as an inspiration for the mold.

6. ARRANGING THE TILES AND FIRST FIRING

After having dried, bricks are transported by carriage to the oven, to be stacked inside from the bottom to a height of 1.20 meters. They are arranged in a way that allows room for the firing mouths but also enough space in-between so that the flame and heat can travel freely for a homogenous firing. The corners of the oven, sparsely reached by the flames, necessitate hot-air corridors, since insufficiently baked bricks are weaker and degrade faster.

7. HIGH TEMPERATURE FIRING

The first stage of firing – the slow burn, lasts for 3 days. After the tiles have hardened, the fire is increased. During the 7-day intensive, day-and-night continuous burn, the kiln is fueled with wood every two hours. After the firing is done, a layer of soil is stacked on top of the brick layer at the top of the oven, to retain heat after the fire has stopped. 7 days later, the kiln has cooled, the soil is removed and the oven unloaded. During firing, the temperature inside reaches around 1000-1050 degrees Celsius. The kiln has thick brick walls, which don`t allow heat to escape.

8. HISTORICAL CONTEXT

Tiles have been made on South-Transylvanian territory since Roman times, but most on-site preserved tiles were manufactured beginning with the 18th Century. Even in the 14th-15th centuries, clay tiles inspired by German and Flemish architecture were present on noblemen's houses and churches` roofs. This tradition, brought by German-trained artisans in the Saxon area of Transylvania, has continued until today.Lately, these tiles have been threatened with disappearance, because of industrially-made coverings - inadequate in appearance, shape, quality. Traditional roofing and bricking - a very difficult craft, is also endangered. It generally requires years of practice, and some processes, like firing, are complex, demanding further experience, making it difficult for an artisan to earn a living at the beginning. This is why they need support.

9. HISTORICAL TILES AND THEIR TYPES

With tiles, the individual shape of each is not as important as the pattern they create together. Of course, there are also decorative tiles, laid on the roofs of churches, mansions, even as accents. When assembled, some resemble a roof - a typical inspiration for the tiles` actual shape, also present in the Saxon and Szekler regions.

10. MOUNTING THE TILES ON-SITE

The worksite is included in the Blue Project, in collaboration with the Monuments Ambulance, under the guise of Monumentum Association, and I participate as a restorer and artisan. The aim of the project is mainly didactic: besides restoration work, we intend to pass on this knowledge to volunteers, who are usually architecture students. We show them what the mounted tiles actually look like, at the eaves level. They are fixed with mortar, which for many artisans poses difficulties, as it is uncommon, and lath is used instead. In the Saxon region of Transylvania, a house has to have its tiles fixed with mortar at the eaves level.

BIRCH BARK HARVESTING
VIDEO TUTORIALS

BIRCH BARK HARVESTING
VIDEO TUTORIALS

In this course you will learn about harvesting birch bark. In the first and last film the use of birch bark for roof covering is shown. The other six films show how the criteria for choosing the right tree and when and how you harvest.

Birch bark have been used as a waterproofing layer under various surface materials. Turf or different kinds of wood was common. With maintenance, the roofing can last for 70-90 years. Since the harvesting is not damaging the tree it is a sustainable building method. Most of the buildings in Sweden were covered with birch bark up until about the 1850-ies and therefore it is an important knowledge in building conservation.

In this course you can watch and learn from eight films in total. The first film is an introduction on how the birch bark is used as a waterproofing layer and the method for laying the sheets of bark and the cover with turf. The roof covering is finished in the last film. Technical solutions in the constructions and laying techniques differ throughout the country.

The films in between are from a course in birch bark harvesting in the month of June in Lillhärdal in the North of Sweden. It is the outer layer of the birch bark that is used and that has to be harvested in the sap period, that differs from different regions. The films show the criteria for a good tree to harvest, which part of the stem you should choose and what to avoid. They also show the technique for cutting and how to release the outer layer of the bark. Finally the storage of the bark sheets is shown.

During the middle of the 19th century, this material was gradually replaced with other materials as waterproofing layers that could be manufactured more mechanically, such as thin wood shingles and eventually roofing felt. The surface materials were also changed.

Master of the course: Stig Nilsson
Format of the modules: 8 pieces of video tutorials
with voice-overs, subtitles and text-form descriptions
Full playtime of tutorial videos: 1 hour 14 minutes and 34 seconds

1. HOW THE SHEETS ARE LAID ON THE ROOF

The short film of the module introduces the technology of building a waterproofing layer under a turf roof. The building of the starting layers are explained in detail, starting from the eaves of the construction. Both the general rules of the covering and the special soltuions and rules of the eaves are discussed besides showing the technical requirements of the roof structure.

2. INTRODUCTION TO BIRCH BARK HARVESTING

Carpenter Stig Nilsson gives an example of birch bark harvesting on a younger and slim tree trunk. He explains the main rules of the harvesting process and how to select the right location to make the cuts. The cutting needs to avoid the dry twigs as those will result in holes on the sheet which is not desirable for a waterproofing layer. Therefore it is advisable to start the cut from such parts. Having made the vertical cut of around 30-40 centimetres and some starting horizontal ones, the sheet can be slowly dragged down from the perimeter of the trunk.

3. HOW TO HARVEST

Carpenter Stig Nilsson provides a few further examples for dragging the bark off the tree with a complete ease. To achieve this there are few key moments to keep in mind. Timing is crucial: the harvest should take place when the tree is in the saping period, at the time the sap bark is full of water. It is important to cut through all the layers of the bark with a sharp knife and it does not even matter if the sap bark is cut, it will not hurt the tree. After a trunk is harvested it takes years till it rebuilds a good bark again that part of the trunk, so practically we can harvest a tree only once.

4. HARVEST FROM DAMAGED STEMS AND OLD TREES

The module explains the difficulties of harvesting trees with damaged and too dry trunks. Damages can occur by the ice and snow in the lower part of the trunks. Close to a river this damaged are can be relatively high on the trunk. At these parts and where the tree is exposed to a lot of direct sunlight, the stem can be very dry. As a result of this these parts can be removed from the trunk with difficulty, requiring some extra patience and efforts.

5. WHEN TO HARVEST

The harvesting is depending on the sap period. This period differs, largely depending on the region, but it can also differ on each individual tree. Therefore good harvesting is mainly the question of good timing, taking also into account the individual situations of the trees, as the saping period might start and end in different time on them. Stig Nilsson cuts an older and damaged tree to show the differences on the harvested bark, exposing the wetter and the drier parts.

6. HOW TO STORE THE SHEETS

The short film of the module shows the technique of storing the harvested birch bark sheets on a pallet. At least a few days of drying is recommended before building the waterproofing layer from it. As part of the drying process the sheets get dry and be flatter that makes them easier to use as building material. The sheets have to be reorganised at least once during the drying process so that the parts poorly accessed by ventillation can be also get dry well. The pile of sheets can receive another pallet for the top or anything that provides weight on them, helping to flatten them.

7. PRINCIPLES FOR LAYING THE SHEETS ON A ROOF

As part of the module Stig Nilsson summarises the main principles and rules when building a waterproofing layer of birch bark sheets. The example is provided using a pallet symbolizing the roof structure. The general part of the waterproofing requires at least 3 layers of bark, but the number of layers can go up to 12, if required. The sheets horizontally require an overlapping of at least 2 inches, making the look of the covering relatively similar to shingling. The edges of the sheets don't need to be straight, but holes are to be avoided. In the case the sheet has some holes, an extra layer might appear under those parts or the sheet can be cut in half, placing the holes to the sides on the halved parts of the original sheet.

8. LAYING THE FINAL LAYERS OF SHEETS

The final module of the course shows the finishing waterproofing and covering works of the same roof as in Module 1. The rules of laying, required overlappings and number of layers around the ridge part are shown and explained in detail. One can also learn about the further layers of the turf roof and the desired orientation of the bark layers in general and right under the grass covering.

SWEDISH LOGBUILDING
VIDEO TUTORIALS

SWEDISH LOGBUILDING
VIDEO TUTORIALS

In this course you will learn how to make notches in hewn and round logs. Through an introduction (lecture) and two series of tutorials you will learn in detail how to make the notches step by step. You can stop the tutorials in your smartphone while training and check the information for each moment.

Making houses in log-constructions has been the dominant building method in Sweden, Norway and Finland, starting in the Viking Age and until the beginning of the 20th century. There are still very many preserved timber buildings that are used or taken out of use. They are important to preserve in order for us to understand the needs and use of the surrounding landscape by previous generations. Log houses are today regarded as an environmentally friendly construction where the traditional log house comes from renewable raw materials, can be reused and leaves few harmful residues. Getting to know the construction method is therefore important both to understand history and to be able to renew it for the future.

In this course you can watch and learn from eleven films/modules in total. The first film is an introduction with a short talk about why this is important to learn, something about your work environment and in the end some words about the tools you need. The tutorials are about making notches with slanting sides in hewn and round logs with two slightly different marking methods. The first notch is the double joint notch with the threshold in the middle and the second, in round logs, is the single joint notch with the threshold to one side. Both notches have been used in Sweden from the 16th century and onwards, most frequently in the region of Dalarna. Making notches with slanting sides requires a certain level of the craftspersons assessment and skill and therefore a lot of training is needed.

Master of the course: Göran Andersson
Format of the modules: 10 pieces of video tutorials
with voice-overs, subtitles and text-form descriptions
Full playtime of tutorial videos: 1 hour 14 minutes and 34 seconds

1. INTRODUCTION. (LECTURE)

Introduction to practical log-construction. Here you find information about the presumptions for log-house constructions, about why this is important to learn, something about your work environment and in the end some words about the tools you need.

2. HEWN LOGS. DRAWING THE LOWER PART

Here you see the starting points for measures and markings. You will also be introduced to the templet used for this notch. The information is texted in the film moment by moment. Find a place where you can practice, and then you can see the film in your phone/computer and stop at any place you need information. This is the first moments in the notch, made in the lower log.

3. HEWN LOGS. CUTTING THE LOWER PART

Here you learn about the use of tools as a saw, a broadaxe and a jointaxe. Try to see the craftspersons different positions of the body, the eyes and grip around the tools. There are several cutting moments and try to understand how precise you have to be in the different moments. In some high precision is needed and in some it is less important. You can finally judge this when you have the complete notch.

4. HEWN LOGS. DRAWING THE UPPER PART

This is the second part of the notch, made in the log above. You use the same templet for measures and markings so the two parts will fit together. Stop the film at any moment to grasp the information.

5. HEWN LOGS. CUTTING THE UPPER PART

Try to see the craftspersons use of different tools and different positions of the body, the eyes and grip around the tools. Try to understand how precise you have to be in the different moments.

6. HEWN LOGS. THE GROOVE

These moments are the essence of log-house construction! The first measures, markings and cuttings (Film 2-5) are only preliminary moments for the logs to be in the right position for marking the groove between the logs and also for the adjustments in the notch so the logs will fit tight together. Here a very high precision with your tools is needed, cut the drawn line of the lead pencil in two.

7. ROUND LOGS. DRAWING THE LOWER PART

Here you learn the starting point for measures and markings. You do not start at one end of the log as in the notch in hewn logs, instead the center of the notch is the starting point. You will also be introduced to the templet used for this notch. The information is texted in the film moment by moment. Find a place where you can practice, and then you can see the film in your phone/computer and stop at any place you need information. This is the first moments in the notch, made in the lower log.

8. ROUND LOGS. CUTTING THE LOWER PART

Here you learn about the use of tools as a saw, a broadaxe and a jointaxe. Try to see the craftspersons different positions of the body, the eyes and grip around the tools. There are several cutting moments and try to understand how precise you have to be in the different moments. In some high precision is needed and in some it is less important. You can finally judge this when you have the complete notch. NOTE! In this film you have 3D sketches were you can see all the moments in the making so far.

9. ROUND LOGS. DRAWING THE UPPER PART

This is the second part of the notch, made in the log above. You use the same templet for measures and markings so the two parts will fit together. Stop the film at any moment to grasp the information.

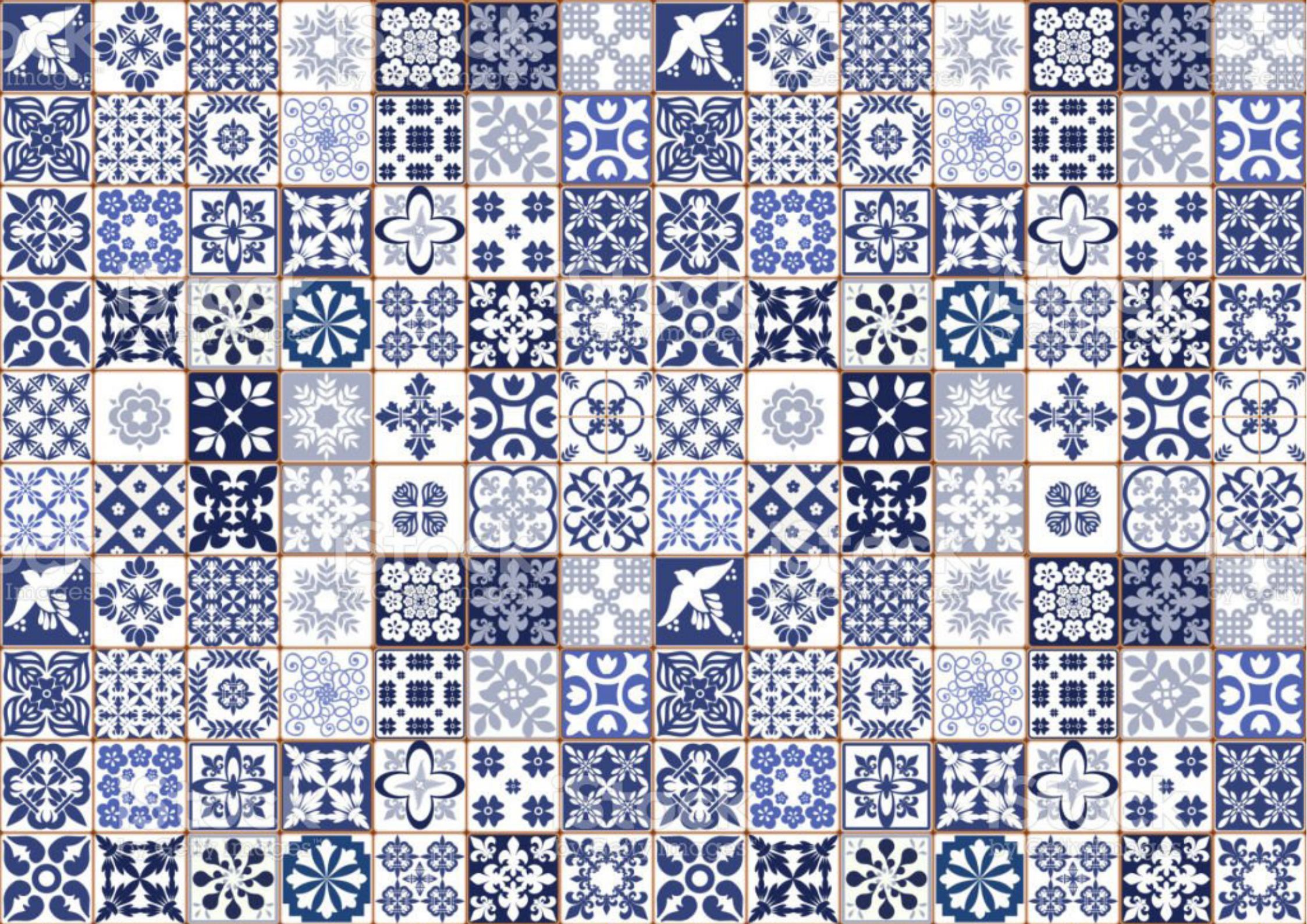
10. ROUND LOGS. CUTTING THE UPPER PART

Try to see the craftspersons use of different tools and different positions of the body, the eyes and grip around the tools. Try to understand how precise you have to be in the different moments. NOTE! In this film you have 3D sketches were you can see all the moments in the making so far.

11. ROUND LOGS. THE GROOVE

These moments are the essence of log-house construction! The first measures, markings and cuttings (Film 7-10) are only preliminary moments for the logs to be in the right position for marking the groove between the logs and also for the adjustments in the notch so the logs will fit tight together. Here a very high precision with your tools is needed, cut the drawn line of the lead pencil in two.

TILE MANUFACTURING
VIDEO TUTORIALS



TILE MANUFACTURING
VIDEO TUTORIALS

This course introduces in a concise way and with practical examples an approach to the universe of tiles from its manufacture to its diverse use. It is intended to make known all the processes involved in the manufacture of tiles; from the raw material to the manufacture and painting, as well as the placement of the tiles on the wall. The tile is an architectural element linked to the history of Portugal that gains great prominence especially from the sixteenth century, and that comes to this day, is present everywhere and constitutes an important link of transmission between generations. It belongs to a family of other decorative objects, along with a variety of functions that the tile plays in civil and religious society.

Through this set of videos, the aim is to present all phases of the manufacturing process of the tile, and to show all the equipment necessary for the proper execution of this ceramic product: types of body, preparation, cutting, shaping and painting of tiles; colours, glazes, glazing and firing; traditional mortars, kilns and laying on masonry. Bearing in mind that the role of the producer of manufactured tiles is also related to the safeguarding of the built heritage, and to the maintenance and restoration of existing panels, we make a short approach to the problems of tile conservation. We present methods of diagnosis and survey, treatment and laying. We talk about criteria and products for intervention.

This course is composed of a total of 9 films, with images of practical examples, accompanied by the appropriate explanations. A last film will deal with the issue of conservation of the tile heritage, with a sampling of certain technical procedures. A fundamental requirement for the execution of tiles is to have a set of equipment. It is essential to have access to a ceramic kiln and facilities that provide adequate working space and comfort. The manufacture of ceramics in general and of tiles in particular is a task with many nuances and small variables that condition and mark the final work. But with dedication everything is achieved, and the effort makes the work much more rewarding.

Master of the course:
Format of the modules: 9 pieces of video tutorials
with voice-overs, subtitles and text-form descriptions
Full playtime of tutorial videos: 1 hour 14 minutes and 34 seconds

1. PIGMENTS, OXIDES AND GLAZES - PART 1

Identification, preparation and application of pigments and glazes. This module aims to show the painting process using natural pigments. Learning objectives: understand and distinguish the existing types of pigments, get to know some of the pigments used in tile painting, identify the main oxides and types of glazes used to colour pastes, under or over glazes and to colour glazes etc.

2. PIGMENTS OXIDES AND GLAZES - PART II

Identification, preparation and application of pigments and glazes. This module continues the previous one by showing some more variety in tile painting and the application of coloured glazes. Learning objectives: know the properties of oxides (solubility, thermal stability, physical and chemical resistance, granulometry), understand what they are glazed over, identify the most common components in glazing and glaze tiles etc.

3. MANUFACTURING AND TYPES OF TILES

This module aims to present the traditional methods of manufacturing tiles. The ballast. Some types and dimensions, plain, beveled and relief. Shaping, shaping, cutting and drying. Understanding the general process: removing impurities; drying (losing excess water); kneading; shaping and unmoulding; 2nd drying; 1st firing (filling); glazing; colouring process (optional); 2nd firing (final).

4. PREPARATION OF TRADITIONAL MOTIFS

It is intended to show some types of painting on ceramics and tiles: know the most used variations, hand-painted, stamped, old techniques, dry string and edge, boxed, figurative, vegetal, pattern, etc..; pigment dyes, glazes, etc.; see some examples and the various glazin techniques. Firing. Kilns and firing accessories: gazettes and trivets. Colouring the tile can be done with pigments, stains, glazes or glazes. Taipal, vertical support for manual and artistic painting.

5. MASONRY AND MORTARS FOR TILE SETTING

Preparing the masonry, and types of mixtures in the composition of traditional mortars. This module aims for the student to get acquainted with the preparation of walls and masonry, and with the types of mortars used.

6. APPLICATION/SETTING OF TILES

The aim is to show the technique of laying tiles on a wall support. Learning objectives: know how to lay tiles, know how to apply mortar, materials and equipment, understand how to prepare the walls, do the preliminary cleaning, the levelling of cracks and gaps, the moistening of the support or plaster, realize the need to allow a drying time between the application of the plaster on the substrate and the application of the laying mortar etc.

7. HISTORIC TILES

Identification of agents and mechanisms of degradation. Mapping pathologies in historic buildings. This module aims to raise awareness of conservation issues. Know the main causes of degradation: environmental, manufacturing, chemical, physical and biological.

8. CONSERVATION OF ANCIENT TILES

Short approach to conservation and restoration. Stages of diagnosis. Learning objectives: identify the need for in situ treatment or removal of the tiles from the support, know how to start a graphic and photographic record, and mark the units, how to make a facing, understand its usefulness, understand how each unit is cleaned (removal of mortar from the back, cleaning of grease, various types of dirt, biocolonisation, etc.).

9. OBSERVATION OF A TILE RESTORATION

Detailed observation of a tile restoration. Capture the phases of intervention and the procedures in sequence. Use of appropriate equipment and materials. Learning objective: to know the intervention process (cleaning, eventual desalination, consolidations, adhesive bonding, fillings, chromatic reintegration, varnishes and finishes), to know the equipment and auxiliary materials: lights, magnifying glasses, binocular magnifying glasses, scales, desiccators, vacuum chambers, vats, brushes, blades and scalpels, needles, laboratory material; the various types of adhesives, varnishes, waxes, resins and binders; solvents, reagents; inks and pigments; paint brushes and airbrushes; products for moulds, fillers, finishers and mortars etc.

DECORATIVE PLASTERING
VIDEO TUTORIALS

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This short course introduces, in a concise way and with practical examples, an approach to the universe of stucco, of lime and plaster pastes, with the most diverse fillers and dyes, their manufacture, and their use as an eminently decorative element integrated in the architectural universe, incorporating a craft tradition that has been of enormous importance, especially from the 18th century and after the Lisbon Earthquake of 1755, with great influence from plasterers from Italy. These decorative elements complement the mural surfaces, atriums, staircases, and ceilings, qualifying the houses that have them, protecting them with an effective coating and endowing them with rich and varied aesthetic compositions.

The aim is to present all the stages of the stucco manufacturing process, and the various types of manufacture of ornaments, figures, marbling, paintings, escutcheons and decorative friezes, and to make known all the equipment necessary for the proper execution of this decorative resource. Types of stucco, mixtures, surface preparation, ornament manufacture, on the table and in situ, manufacture of a sliding profile, frieze manufacturing techniques, gluing of ornaments on ceilings or walls, approach to the construction of figures by moulding, old and new products, and all the necessary equipment for the stucco work.

This course is structured in the following way: 12 films will be shown in total, some being tutorial films, with images of practical examples and explanations of the techniques. Moreover, 1 film will address, in a geographical context, the thematic variability of the stucco in the North of Portugal.

It is necessary to consider that to work in stucco it is necessary to have some equipment, and it is fundamental to have access to facilities that provide adequate space and working comfort.

Stucco work is a task with great tradition that can be carried out on large surfaces with large ornaments, or in the studio, moulding or modelling small decorative figures. It has a role in the restoration of historic buildings, but can be equally pleasurable as a small individual artistic manifestation.

Master of the course:
Format of the modules: 12 pieces of video tutorials
with voice-overs, subtitles and text-form descriptions
Full playtime of tutorial videos: 1 hour 14 minutes and 34 seconds

1. SHORT INTRODUCTION TO STUCCO

In this module the student should have an introduction to stucco as a traditional constructive and decorative technique. Understand the context, utility and essential components of this practice.

2. MATERIAL TECHNIQUES AND EQUIPMENT

In this module the student must learn about the materials themselves, visualise the various tools linked to mixing the paste, its application, as well as the profiles and cutting.

3. PREPARATION OF PLASTER

In this module the student should watch and understand the application process of the first stage of preparing the surface for the final stucco, on top of a lathed wood simulating a traditional wall, Visualise the way of mixing between components and application with appropriate material. Should pay attention to the quantities and materials used.

4. PREPARATION OF "ESBOÇO"

In this module the student visualises the application of the last phase of the traditional plastering process of a wall. Learning objectives: the student should always understand drying times and the components of the mixture in the final mortar, the student should understand the relationships of these components to the requirements of a good finish.

5. PROTOTYPE BY CASTING AND CARVING

Prototype execution, materials and techniques used, elaboration of a piece by addition and another by extraction. In this module the student should visualize and understand the difference of execution and application of prototypes of decorative models. Knowing materials and techniques used, understanding correctly what is the elaboration of a piece by addition and another by extraction. With the help of moulds, forms or profiles it is quicker and perhaps more perfect, whereas the work of carving or modulation, similar to that of ceramic paste is slower and technically much more demanding.

6. MOULD MAKING

Silicone mould execution according to contemporary techniques. In this module the student will learn about the various types of mould construction for decorative

elements banners and other ornaments. Some types of moulds: lost shape moulds, tassel moulds, flexible moulds, latex, gelatine, silicone moulds. Must understand the notion of moulds and counter-moulds, supports and spacers. Should know various resins of quick use and more contemporary manufacture. Visualise the construction of a silicone resin mould.

7. ORNAMENTS

Execution of an ornament: flowers, decorative friezes, etc. In this module the student will learn about the execution of a stucco ornament and will observe the necessary procedures as well as the sequences and materials used. In general, the execution of these works requires some attention, due to the quick hardening characteristics of the pastes. It is necessary to pay extra attention to the mixing of mortars when applying ornaments directly on the site for which they were designed. Sometimes they need to be filled in.

8. FRAMES

Execution of a running mould and elaboration of a frame. Visualisation of linear ornaments and mouldings applied directly onto the plaster, with the aid of the "running mould", a mould consisting of a metal plate cut to the desired design and curvature, attached to a wooden structure, which can be handled, and which slides through a system of guides fixed to the walls. A system that uses a particular tool to be applied generally on the roofs of houses. The operation consists of the systematic application of mortar, bonding work in the corners of the ceiling and the final cleaning of the plaster.

9. PAINTING AND PRETENDING

Decorative techniques used in stucco decoration, tools and material applied. Visualisation and knowledge of decorative techniques. An approach to tools and materials final coatings by painting over white stucco. Understanding the possibilities of colouring stucco. Coloured stuccos in preparation and application, or painted with lime or resin paints, glue and oil. Fresh painting and methods of transferring designs of decorative elements on stucco such as stamping or using tracing paper and charcoal powder. Some types of pretenders such as wood and natural stone, usually marble.

10. GILDIING

Gilding as a decorative element of stucco or of embossed elements in stucco. Simple gilding by painting with gold paint. Sometimes a more personalised finish can be given by using gold leaf on decorative elements made of stucco. This process shares the Portuguese tradition of gilded woodcarving, another decorative element, eminently religious in nature, which competes with stucco. Visualisation of a preparation of a piece for gilding, use of mordents, brushes, gold leaf and burnishing devices, tools and materials used in different types of gilding.

11. SCAGLIOLA

The method consists in a mortar preparation, mainly made of plaster, pigments and some drying retardant components of the plaster - like rabbit glue for instance - that allow an infinite variation of colours and an imitation of marble, or other type of stone. These pastes, after mixed and sliced, are applied to the spoon with a certain thickness, and pressed for total filling, while maintaining a certain degree of plasticity, reproducing randomly the veins, imperfections and colours of the natural stone. Afterwards, the process finishes with polishing, sanding and various finishes. It is a relatively simple process to perform and understand.

12. SAMPLING HISTORICAL STUCCOS

In this module the student can view some historical decorative stuccos on display and then understand the immense possibilities that this technique provides as an architectural decorative element.

EXAMPLE LESSON PLAN

VIDEO TUTORIALS COMBINED WITH
PRACTICAL TRAINING

EXAMPLE LESSON PLANS
VIDEO TUTORIALS COMBINED WITH PRACTICAL TRAININGS

1. BIRCH BARK HARVESTING COURSE - LESSON PLAN

INSTRUCTIONS FOR TEACHERS: Watch all the movies.

Explain to the student what is required in terms of tools, for storage and transportation. It´s about one or two sharp knives, some kind of frames (see in the films) for the storage and something to make a pressure on the bark between the frames and steel wires for the final storage and transportation. Call on the student to seek a property owner that are willing to harvest some of the birches on hers/his land. Tell them also to ask older people in the region at what time is the sap period for the birch trees. While training to harvest the birch bark there could be interesting meetings with elderly people that has something to tell about the use of birch bark.

Stimulate the student to reflect on their own learning in the practical parts: think about how to learn best, how you want to practice? And pay attention to their senses, the feeling in the body when one loosens the outer layer of bark, the sound and maybe also the smell.

Important: the knives should be razor sharp and therefore protect both the knives and you own body. It is important to explain that in the end there can many different solutions on how to do this depending on the local context. It is very interesting if one happens to meet someone that has done this before, many years ago.

DESCRIPTION OF TRAINING - MODULE 5:

1. Ask the students to watch the complete series of films at lest a day ahead of the practical training.
2. At the plot check together all the available tools.
3. Summarise the required steps and show an example for the students.
4. Students can start working on their own pieces. Help them with advices and remind them on the techniques seen in the videos.

REQUIRED TOOLS: sharp knives
DURATION: 90 minutes

2 SWEDISH LOG HOUSE BUILDING - LESSON PLAN

INSTRUCTIONS FOR TEACHERS: Watch all the movies.

Explain to the student what is required in terms of tools. They do not have to be expensive to fit log-house construction. It can be used tools. The important thing is to make the tools their "own" by grinding the edge and making shafts that fit. See especially Module 1.

When you practice, the quality of the wood does not have to be very high. It should be spruce or pine, but it does not matter if there are larger or smaller branches in the wood. The logs should be straight-grown. If the student manufactures a construction to be sold, the wood should be made of pine and have as high a core content as possible, densely grown and evenly grown (do not have too large "jumps" between the annual rings).

Stimulate the student to reflect on their own learning in the practical parts: think about how to learn best, how you want to practice? And pay attention to your senses, think about how you use the eye to direct your tool and how the body works, do not hold the tool too tightly and be sure to adjust your working position to the most optimal.

Important: in the tutorials for the log construction it is stressed that all the first measurements, markings and hewing of the notches is just preliminary moments before the actual marking is done, with the special tool, and that is the most important part of this craft.

It is important to explain that in the end there are many different solutions, both constructively and aesthetically, to the same functional requirements that are placed on different buildings.

DESCRIPTION OF TRAINING - MODULE 1:

1. In the workshop check together all the available tools and the logs.
2. Summarise the required steps and show an example for the students.
3. Students can start working on their own pieces. Help them with advices and give instructions if required.
4. Ask the students to watch the relevant film after the class.
5. Ask them to fill a test having watched the film.

REQUIRED TOOLS: chisels, saws (handsaw, tenon saw), axe, hammer, angle, ruler, pencil, mesuring tape, rule, spirit level, clamp
DURATION: 90 minutes

3. BLACKSMITHING COURSE - LESSON PLAN

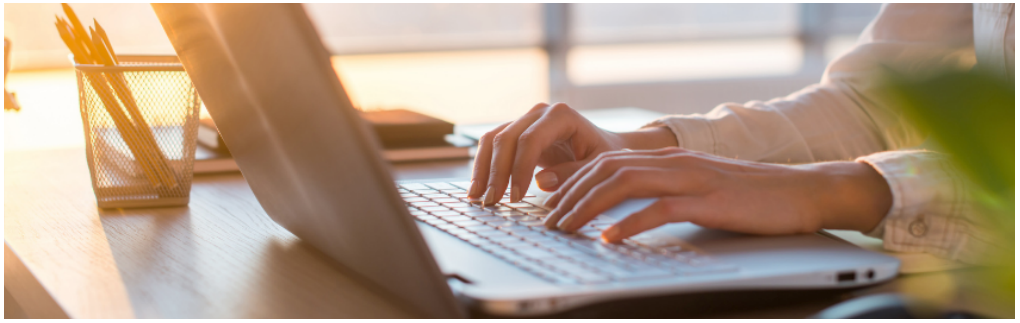
INSTRUCTIONS FOR TEACHERS:

Install a great screen in the workshop or ask the students to use their own smartphones or tablets. Watch together with the students one of the modules at the start of the class. Discuss together the processes and if required show the key techniques yourself too. Check together all the available tools and materials. After this students can start working on their own pieces. Help them with advices and give instructions if required or they can consult the films and descriptions themselves on their devices. We recommend to start listening to the introductory video first and to take care of your safety!

Gained competencies and practical skills:

- Characteristics of metals used in blacksmithing, their types, classification, production and use.
- Properties of fire and forge, the influence of temperature in the production of metal products.
- Technical principles of metal forming: heating, forging, forming, etc.
- Blacksmith's tools: types, purpose, properties.
- Production of blacksmith's products – at least 9 products are produced during the course; all products are suitable to use in household or craft.
- Decoration elements of blacksmith's products: formation and decoration, methods, methodology, technical solutions.
- Renewal of old blacksmith's products, removal of rust, protection from further decomposition processes.

REQUIRED TOOLS: hammer, tongs, forge, anvil, cut chisel, nail header board, hole puncher, metal brush, sandpaper, rasp, rag
MATERIALS REQUIRED: different metals (iron, steel), borax powder, wax
DURATION: 45 minutes for each module



4. TILE STOVE RESTORATION COURSE - LESSON PLAN

Install a great screen in the workshop or ask the students to use their own smartphones or tablets. Watch together with the students one of the modules at the start of the class. Discuss together the processes and if required show the key techniques yourself too. Check together all the available tools and materials. After this students can start working on their own pieces. Help them with advices and give instructions if required or they can consult the films and descriptions themselves on their devices. We recommend to start listening to the introductory video first and to take care of your safety!

Gained competencies and practical skills:

- Physical properties of clay used in ceramics, clay preparation and use possibilities.
- Various principles and skills of clay formation and decoration.
- Tools and their use possibilities: types, purpose, properties.
- Production skills of two different techniques: throwing and coiling.
- Production skills of lids for stove cleaning ducts and their parts.
- Implementation of the burning process of ceramic products.
- Leaven preparation and use for ceramic items.
- The basics of tile stove installation (building).

REQUIRED TOOLS: throwing wheel (or hand-powered wheel), gloves, wire (or a strong thread), tousle tool, wooden/metal knife, a piece of leather, kiln and its components for burning (for tile burning)
MATERIALS REQUIRED: clay, water, vegetable oil, oat flour
DURATION: 45 minutes for each module