WBS TRAINING AG

ERASMUS+ PROGRAMME 2014-2020
Mobility of Individuals – Mobility of VET learners

Computer Aided Design

Description and Goals

Experiencing professional training in Germany, thus getting to know its culture and regional differences and specialties paired with the latest developments in education and the labour market in the field of computer aided design are the essence of this training programme.

The training experience comprehends how to sketch technical drawings with Autodesk 2016 (starting October Autodesk 2017) using AutoCAD 2D, AutoCAD 3D (2 weeks training) and Autodesk Inventor 2016 (3 weeks training). This will include detailed information about the workspace, basic operations and commands as well as drawing and completing assemblies. Furthermore, the learners will generate 3D parts which have derived from 2D, complete parts and do animations with Inventor (3 weeks training). The learning process will be supported by many practical exercises covering all topics. Certainly the highlight of this course: Selecting one of the learners' projects and printing it in 3D, thus linking theoretical knowledge into a hands-on experience. If they wish, the learners can take the 3D model – the result of their own work – back home with them.
Finally, the students will work on a group work and present their results to an audience. All topics will be covered by professionals formerly or currently working in that field, respecting the latest trends in that industry and applying a hands-on approach.

Given the wide range of topics AutoCAD can be used for, the focus can be shifted according to the target group, thus, the programme is suitable for various professions. And Dresden offers just the right background for each of them:

Mechanical Engineering
- Sketching of mechanical parts (machine and/or car parts)
- Study visit to the *Transparent Manufactory of Volkswagen* and/or to the *Centre Of Motorcar Industry* in Dresden

Modern Architecture
- Sketching of modern buildings
- Study visit to some of Dresden's modern buildings (*Military History Museum* – Arch.: Daniel Libeskind, *Ufa-Kristallpalast* , building of *Saxon State Parliament*, *Synagogue*)
- Comparison between modern and baroque architecture in Dresden (study visit)

Civil Engineering/Housing
- Sketching of buildings with the feature of low energy consumption
- Study visit to a Low Energy House in Dresden

There are other topics available upon request. The below attached programme is exemplary of *Mechanical Engineering*, only the study visits of other specialisations are included.

In addition to the technical content of the programme the learners will get the chance to improve their language and soft skills and experience Dresden through cultural visits and other free time activities.

General Information

Place
WBS TRAINING AG
Dresden (other places on request and availability)

Duration
2 or 3 weeks, lessons from Monday – Friday 9.00 – 14.30 (longer hours are possible on request)

Number of participants
14-20

Training Language
English or German (level A2 required)

Contact

For further information on the training programme and for support with the project application, please feel free to contact:

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Target group

VET Learners of public or private schools training in the field of *Computer Aided Design* who would like to expand their skill set by discovering relevant aspects and approaches of training in that field in Germany as well as German culture.

The intensity and complexity of the units can be varied according to the previous knowledge and qualification of the participants.

Learning outcomes

Professional Competences

Unit 1: Applying AutoCAD for designing 2D technical drawings

- Arranging the AutoCAD workspace for better working conditions
- Using layer and editing commands
- Drawing precisely using object snaps, coordinates and tracking tools
- Drawing scaled objects in 2D with the proper dimensions
- Drawing dimensions
- Isometric drawing
- Creating and applying blocks, block library and attributes
- Putting together scaled drawings

Unit 2: Applying AutoCAD for designing 3D technical drawings

- Applying basic operations in 3D on the basis of skills and knowledge acquired in AutoCAD 2D
- Working with the coordinate system in 3D space
- Generating 3D parts
- Assembling 3D parts to complete objects
- Deriving 2D drawings from 3D drawings

Unit 3: Applying Autodesk Inventor for designing 3D technical drawings with animations (only 3 weeks training)

- Applying basic operations in 3D space on the basis of skills and knowledge acquired in AutoCAD 3D
- Creating parametric sketches
- Using sketches provided with constraints
- Creating views and sections of parts and assemblies in drawings
- Dimensioning part views
- Creating animations of assemblies

Unit 4: 3D print of a project's model (effective for 2 and 3 weeks training)

- Competitive selection by learners of an extraordinary project
- Preparing the project for 3D print
- Translating the project's data to G-code (used software: *ideaMaker*)
- 3D print of a model

Project Funding

The costs for this training programme can be fully or partially (depending on the number of participants) covered by project funding from the Erasmus+ programme (Key Action 1: Mobility). Please contact your National Agency for information on funding details.

Personal Competences

Unit 5: Giving a presentation on a professional topic

- Researching information on the internet using filters, comparing sources and filing it in folders on the hard drive
- Defining the issues of a complex professional task and their solutions
- Preparing a presentation about the project work in MS PowerPoint
- Presenting the work results in English or German using adequate terminology

Unit 6: Working in a team confidently and self-responsibly

- Setting work priorities and applying effective time management
- Sharing information with the team
- Listening to other team members' ideas and phrasing feedback adequately
- Assuming the own role and taking responsibility for own activities

Methods

The practical training course uses a learner-centred approach. After an introductory lecture by the trainer, the learners will mainly work on individual exercises, which will be assigned to them by the trainer, who – in particular in the beginning of the training – will give step-by-step instructions if necessary.

An essential element of the training is the project work on an AutoCAD or Inventor project on a topic which can be determined by the learners themselves. The learners will work in groups, which requires and improves skills such as autonomous work planning and team work. During the lessons the trainer as well as the learners will use different tools of visualization such as PowerPoint, pinboard, whiteboard and flipchart.

Other methods used in the training course will be:

- Brainstorming and mind mapping
- Interviews with classmates or clients/customers – field study
- Observing and describing
- Group discussions
- Presentation and demonstration

Assessment and Certification

In order to obtain reliable statements on whether all learning outcomes have successfully been achieved, a final assessment will be carried out. For this purpose, during the second or third week of their practical training, the learners will carry out an own project. This task will resemble a typical project work of the training field according to working life requirements. For the performance of this task, the learners will have to use their newly acquired knowledge, skills and competences. The participants will work in groups of 3 to 5 learners to complete their project work and will be supervised by their trainer. The actual assessment will take place on the last training day: The learners will give a presentation about their work, justifying the working progress and results.

Accommodation and Subsistence

Accommodation, subsistence, public transport tickets and cultural programme can be organised according to your wishes.

Please see financial offer for further details of the included services.

To assess the work results, the trainer will work with standardised assessment sheets, which cover assessment criteria such as:

- Effective teamwork
- Correctness of work results
- Structure of the presentation as well as the quality and creativity of visualization

Upon successful completion of the mobility, the learners will receive a certificate by WBS TRAINING, supplemented by the description of learning outcomes according to the European Credit System for Vocational Education and Training (ECVET) principles. ECVET facilitates the transfer and recognition of learning outcomes acquired in another country and supports transparency of qualifications. WBS TRAINING also supports the sending organization in issuing the Europass mobility.

Cultural Programme

Dresden offers a wide variety of cultural, free time and physical activities. With plenty of museums, such as the famous *Historic Green Vault*, the *Old Masters Picture Gallery*, the *Technical Museum*, or the *German Museum of Hygiene*, everyone's taste can be met. Parks and gardens with the option to relax, to work out or to play a ball game, picturesque viewpoints, and many other places of interest just wait to be discovered. Not to forget the city Dresden itself: More than 800 years old, the city looks back to a long and exciting history. The lively *New Town* as well as the *Old Town* with its historical buildings – mostly reconstructed and renewed after the World War II – and the river *Elbe* are definitely worth seeing!

We will provide you an overview about all the things in and around Dresden and help you to decide, what to do. Depending on entrance fees, extra costs for transport, and/or different costs for services, additional expenses may arise.

Programme proposal
Computer Aided Design (2 and 3 weeks)

Date	Programme
Sunday, Day 1	**Welcome** at Dresden Airport/Main Station **Arrival** at Hostel
Monday, Day 2	**09:00 – 09:30** **Introduction:** - Presentation of the host organisation - Clarification of organisational issues - Introduction of the project and the tasks for the following weeks - Introduction to the Training Course - Meeting your trainer **09:30 – 14:30** **AutoCAD 2D:** - Getting to know the workspace of AutoCAD 2016/2017 - Getting to know basic operations and commands **Afternoon:** **Cultural Programme:** - Guided tour in the old town
Tuesday, Day 3	**09:00 – 14:30** **AutoCAD 2D:** - Using layer and properties - Putting together scaled drawings - Applying text and pattern in AutoCAD - Getting to know drawing and editing commands
Wednesday, Day 4	**09:30 – 14:30** **AutoCAD 2D:** - Drawing dimensions - Isometric drawing - Putting together scaled drawings - Creating blocks and block library
Thursday, Day 5	**09:30 – 12:00** **AutoCAD 2D:** - Designing basic technical objects, e. g., hinge, drive plate, lever **Afternoon:** **Study visit:** - Transparent Manufactory of Volkswagen (*Mechanical Engineering*) - Dresden's modern buildings (*Modern Architecture*) - Low Energy House (*Low Energy House*)
Friday, Day 6	**09:00 – 14:30** **AutoCAD 3D:** - Getting to know the workspace for AutoCAD 3D - Designing 3D parts, e. g., wheels, shocks, spark plugs
Saturday, Day 7	Weekend at the disposal of the group, we will be happy to suggest cultural and other free time activities and to help organise a suitable programme.
Sunday, Day 8	

Date	Programme
Monday, Day 9	**09:00 – 14:30** **AutoCAD 3D:** - Designing 3D parts, e. g., suspension, crankshaft, tank, chassis
Tuesday, Day 10	**09:00 – 12:00** **AutoCAD 3D:** - Derivation of 2D drawings **Afternoon:** **Study visit:** - Centre Of Motorcar Industry (*Mechanical Engineering*) - Comparison between modern and baroque architecture in Dresden (*Modern Architecture*)
Wednesday, Day 11	**09:00 – 14:30** **AutoCAD 3D:** - Completing parts to assemblies - Creating views and sections of parts and assemblies - Selection and preparing a project for 3D print (2 weeks course) - 3D print of a model (2 weeks course)
Thursday, Day 12	**09:00 – 14:30** **AutoCAD 3D:** - Creating an animation of an engine - Views and sections of parts and assemblies
Friday, Day 13	2 weeks course: **09:00 – 12:30** **Finishing the final presentations** **12:30 – 14:30** **Presentations, assessments, and farewell** - Giving final presentations about the individual project work - Assessment of the newly acquired knowledge - Evaluation of the project and handing out certificates 3 weeks course: **09:00 – 14:30** **AutoCAD 3D:** - Completing auto parts to vehicle
Saturday, Day 14	**Departure …**
Saturday, Day 14 Sunday, Day 15	**… or continuation with Autodesk Inventor** Weekend at the disposal of the group, we will be happy to suggest cultural and other free time activities and to help organise a suitable programme.
Monday, Day 16	**09:00 – 14:30** **Autodesk Inventor:** - Creating parametric sketches - Providing sketches with constraints
Tuesday, Day 17	**09:00 – 14:30** **Autodesk Inventor:** - Generating 3D-parts - Creating derivations of 2D drawings
Wednesday, Day 18	**09:00 – 14:30** **Autodesk Inventor:** - Completing parts to assemblies - Creating views and sections of parts and assemblies - Selection and preparing a project for 3D print (3 weeks course) - 3D print of a model (3 weeks course)

Date	Programme	
Thursday, Day 19	**09:00 – 14:30**	**Autodesk Inventor:** - Creating an animation of an engine
Friday, Day 20	**09:00 – 12:30** **12:30 – 14:30**	**Finishing the final presentations** **Presentations, assessments, and farewell** - Giving final presentations about the individual project work - Assessment of the newly acquired knowledge - Evaluation of the project and handing out certificates
Saturday, Day 21	**Departure**	

Training programme/Description of practical training units
Suggestions for Cultural Programme/Free time activities
Study visit

Last update: 17.11.2016