



Pedagogical sequence framework -

Project « Brabourgstone »

formular (modèle à dupliquer)

Teaching area	Applied computing (AutoCAD drawing) Styles in architecture, Stonemason structures, Petrography, Practical lectures, Organisation and account of the works
Theme	EXTRUDE command – extrusion of profiles according their outline
Learning outcomes/competences	Students will be able to : <ul style="list-style-type: none">- Acquire and express in words the possibility of using the command EXTRUDE- Acquire basic characteristics and rules of use of such command- Identify the possibilities assigned to specific options of this command- Apply the command EXTRUDE at exact case - from sketch to workshop drawing- Choose properly specific options of the command and apply it correctly- Make the bill of quantities for a rosette, by use of spreadsheet calculation
The age of the students (required prior knowledge)	Students of the fourth grade of high school / 17 and 18 years of age
Prevailing type of activity (field research,	Lecture and discussion About stone plastic and its use through history on



game, practical activities ...)	<p>different historical buildings, cases of interlace and rosette, about the rosette designed by students at the lessons of drawing and modelling, about the type of stone which they would use to make a rosette, and about the ways in which they have been drawing stone plastic until now and made the templates for their respective execution at practical lectures</p> <p>Use of literature and online tutorial</p> <p>Information about the features of the command EXTRUDE and its options, illustrated on the real cases, elaboration of the possibilities of displaying the treatment surfaces of drawn 3D facilities</p> <p>Data processing - team work</p> <p>Elaboration of the sketch and joint identification of methods and forms of drawings, sketching the rosette profile based on given scales.</p> <p>Drawing of required profiles applying previously acquired commands.</p> <p>Creative response to a topic</p> <p>Use of the command for extrusion of profiles at the pre-set paths in order to shape the rosette, rosette display in the layout, preparation for paper rendering, rosette rendering at A2 format paper</p>
Key terms	<p>Applied computing:</p> <ul style="list-style-type: none">- EXTRUDE command- path <p>Styles in architecture</p> <ul style="list-style-type: none">- ornament- rosette <p>Petrography</p> <ul style="list-style-type: none">- selection of stone for execution with respective explanation



	<ul style="list-style-type: none">- autochthonous stone (benefits and shortcomings)- possibility of implementation in interior and exterior design <p>Stone-carving structures</p> <ul style="list-style-type: none">- complex stone plastic- scale <p>Practical lessons</p> <ul style="list-style-type: none">- templates <p>Organisation and calculation of works</p> <ul style="list-style-type: none">- measurement evidences- bill of quantities
<p>Pedagogical scenario/ achievement of pedagogical sequences</p>	<p>Student Motivation for the Project</p> <p>After studying of interlace and interlace ornamentation, emerged the idea to transform the interlace into a rosette. During the lesson of drawing, students made the sketch of the rosette, however the precise workshop drawing is required to make the templates, which will be further used to carve the rosette in the stone.</p> <p>Student use computer to develop workshop drawing and templates for subsequent carving of the rosette.</p> <p>Parallel they make 3D model, to be used for presentation of rosette to possible interested customers.</p> <p>Students choose the stone for their future rosette, considering the aesthetic, petrographic and technical-technological features of the stone.</p> <p>Use of literature and online tutorial</p> <p>New command which students need for drawing 3D model of the rosette is the command EXTRUDE, which enables transformation of two-dimensional objects</p>



into three-dimensional ones. Students learn about this command and its options through different real cases and literature (textbooks, books, online contents).

Definition of drawing scenario – group and team work

After learning about the command, students, now divided in groups (in this specific class in 5 groups), discuss and agree on the final appearance of the drawing, required cross sections, rosette dimensions, they define profile and dimensions of the profile.

The most acceptable and most realistic model, in cooperation with the teacher of stone-carving structures, is approved and all the groups draw it.

Definition of dimensions of the rosette is the first step. It is the basis for definition of dimensions and type of piece of stone which shall be used to carve the rosette from it. Definition of dimensions of the raw material shall be used for procurement of material and for elaboration of Bill of Quantities.

Students have chosen the material - named *Veselje Unito*, autochthonous stone famous for its aesthetic features and suitable for stone-carving treatment.

Profile drawing applying already known command POLYLINE

According to defined dimensions, students plot the profile which shall be extended along the circular path of the rosette; they further plot the rosette circular and other outlines.

Implementation of the command EXTRUDE

Applying the command EXTRUDE, students shape the three-dimensional rosette from the plotted two-dimensional object.

Model display in the layout



	<p>In order to plot the rosette on the paper, students display it in the layout. They use different displays, cross sections and scales, and define its elevations.</p> <p>Rosette is also displayed in 3D format.</p> <p>During the practical lesson they make the necessary template for the execution of the rosette.</p> <p>Model rendering on the paper</p> <p>The best work is developed as rendering in A2 format paper. They plot the template which they are going to make during the practical lesson, and which shall further be used for carving of rosette.</p> <p>Drafting of Bill of Quantities</p> <p>Students make the Bill of Quantities based on the drawing and the chosen type of stone.</p> <p>Students develop alternative BoQ-s , proposing other types of stone (<i>sivac, travertin,...</i>) and compare them.</p> <p>Presentation of the work</p> <p>Drawing and accompanying documentation will be exhibited along with the made rosette, as sort of project documentation</p>
Place of activities' realisation (classroom, outdoor area...)	School computer classroom
Teaching instruments and tools, necessary material	Sketches, computers, internet, projector, plotter
Duration of the activity	8 hours
Outcomes verification method	Analysis of students' works, amendments and supplements of the drawings, students' explanations and descriptions related to drawings



Co-funded by the
Erasmus+ Programme
of the European Union

Material results/ demonstration of work and accomplished results	Drawings saved in digital format, paper renderings of selected drawings