

西安交通大学《建筑表现基础》课程教学大纲

一、课程基本信息

课程名称	建筑表现基础		
	Fundamentals of Representation		
课程编号	ARCH400131		
课程学分	4	总学时	64
学时分配	授课学时:64		
课程类型	<input type="checkbox"/> 公共课程 <input type="checkbox"/> 通识课程 <input type="checkbox"/> 学科门类基础课 <input type="checkbox"/> 专业大类基础课 <input checked="" type="checkbox"/> 专业核心课 <input type="checkbox"/> 专业选修课 <input type="checkbox"/> 集中实践		
开课学期	<input checked="" type="checkbox"/> -1 <input type="checkbox"/> 1-2 <input type="checkbox"/> 2-1 <input type="checkbox"/> 2-2 <input type="checkbox"/> 3-1 <input type="checkbox"/> 3-2 <input type="checkbox"/> 4-1 <input type="checkbox"/> 4-2 <input type="checkbox"/> 5-1 <input type="checkbox"/> 5-2		
先修课程 Prerequisite Courses			
教材、参考 书及其他 资料	参考书 Bibliographies: [1]Evans, Robin, <i>Translations from Drawing to Building and Other Essays</i> , AA, 2003 [2]Rendow Yee, <i>Architectural Drawing. A visual Compendium of Types and Methods</i> , John Wiley & Sons Inc., 2007 [3]Lorraine Farrelly, <i>Representational techniques</i> , Ava Publishing SA, Lausanne, 2008 [4]Matthew Frederick, <i>101 Things I Learned in Architecture School</i> , MIT Press, 2007		

二、课程目标及学生应达到的能力（工科专业对标工程教育认证标准中专业毕业要求的12条具体指标点，其他专业对标行业/评估标准中专业毕业要求的具体指标点）

II Course Objectives (by the end of the lesson students will be able to...)

1. 介绍建筑和城市尺度中空间视觉描述的基本概念。讲授投影几何学，掌握手绘、技术绘图和数字绘图。
 2. 逐步掌握从草图到制图、从绘图到建模的多种建筑表现技法。
 3. 认识和理解建筑绘图语言及其在设计作品交流中的不同作用。
 4. 学习三维建模和三维物体动画的基础知识
1. Introduce basic concepts of spatial visual description in the architecture and urban scale. Freehand drawing, technical drawing, and digital drawing will be supported by lectures of Descriptive Geometry as a science of graphical representation of three-dimensional lines, surfaces and solids with emphasis and the development of drawing skills.
 2. Students will be guided, step by step, on many different techniques, from the sketch to the map, from drawing to modeling.
 3. Develop awareness and understanding of the language of architectural drawing and its different roles in the communication of design work.
 4. Learn the rudiments of three-dimensional modeling and animation of 3D objects.

课程目标与专业毕业要求的关联关系

Correlation between course objectives and graduation requirements for the program

毕业要求：

本专业毕业生应达到以下知识、能力和素质的要求：

- A. 具备宽厚的人文社会科学和自然科学的理论知识，较强的科学素养、人文情怀与艺术修养，具有健康的身心素质。
- B. 具有扎实的建筑学专业相关理论知识，掌握建筑设计基本原理、建筑历史与理论、建筑与行为、建筑的安全性、建筑结构、建筑材料与构造、建筑物理环境控制、城乡规划与景观设计、经济与法规、制度与规范、建筑师的服务职责等方面的相关知识。
- C. 具有建筑设计以及相关规划设计的方法与技能，掌握建筑设计过程与方法，

并具有较强的建筑设计表达和实践能力，以及良好的创造性思维和艺术创作能力，以及综合分析问题和解决问题的能力。

D. 具有国际开放视野和跨文化的交流、竞争与合作能力。

Students of this major should meet the following graduation requirements in terms of knowledge, ability and caliber:

- A. Possess broad theoretical knowledge of humanities and social sciences and natural sciences, strong scientific literacy, humanistic and artistic dispositions, and have sound physical and mental wellbeing.
- B. Have solid theoretical knowledge related to architecture, master the basic principles of architectural design, history and theory of architecture, architecture and behavior, safety of architecture, building structure, building materials and construction, control of the physical environment of buildings, urban and rural planning and landscape design, economy and regulations, systems and professional codes, responsibilities of architects and other related knowledge.
- C. Have the methods and skills of architectural design and related planning design, master the process and methods of architectural design and have a strong ability to express and practice architectural design, as well as good creative thinking and artistic creation ability and the ability to analyze problems and solve them comprehensively.
- D. Have an international open vision and the ability to communicate, compete and cooperate across cultures.

毕业要求 课程目标	A	B	C	D
1		H	H	L
2		H	H	L
3		H	H	L
4		H	H	L

注：毕业要求中 A、B、C、D、E、F、G、...对应毕业要求中各项具体内容；H、M、L 分别表示该课程目标对毕业要求相关项的强、中、弱程度。

Note: A, B, C and D indicate the specific aspects of the graduation requirements. H, M and L refer to a strong, medium and weak correlation of the course objectives to the graduation requirements respectively.

三、教学内容简介

Description of teaching contents

章节 顺序	章节名称 Chapter Title	知识点 Teaching Points	参考学时 Credit Hours
1	课程概论	授课：从视觉思维到建筑制图 实践：工作室组成、参考书目、案例研究简介、素描本要求；小组工作要求、小组建立；第一次临时徒手画	6
2	视觉思维的语言学基础	授课：视觉思维的语言学基础 实践：魏森霍夫实验区案例简介	6
3	绘图基本要求与方法	授课：绘图惯例和建筑表达工具-度量和测量工具 实践：建筑和城市徒手画	6
4	正交投影	授课：画法几何基础-正交投影 实践：按比例绘制的图纸：平面图、剖面图和立面图	12
5	轴测图	授课：画法几何轴测图基础 实践：三维绘图-轴测图	12
6	透视图	授课：画法几何透视图基础 实践：中心性视角-透视练习	10
7	建筑学交流与数字表达	授课：建筑学交流与数字讲述 实践：用于建筑学讲述的数字工具，练习和实践	6
8	数字建模	授课：物理和数字模型 实践：物理和数字建模-工具、技术和练习	6

章节 顺序	章节名称 Chapter Title	知识点 Teaching Points	参考学时 Credit Hours
1	Introduction to course	Introductory lectures: From visual thinking to architectural drawing Practice: Studio makeup – Bibliography – Introduction to case studies – Sketch book; Introduction to group work, group formation, first ex-tempore freehand drawing	6
2	The linguistic foundations of visual thinking	Lecture: the linguistic foundations of visual thinking Practice: Introduction to case studies: the Weissenhof experimental district in Stuttgart	6

3	Drawing conventions and architectural representation tools	Lecture: Drawing conventions and architectural representation tools - Measuring and Survey Tools Practice: Architectural and urban freehand drawing	6
4	Orthographic projection	Lecture: Basics of Descriptive Geometry Orthographic projection Practice: The drawing to scale: plans, sections and elevations	12
5	Axonometric drawing	Lecture: Basics of Descriptive Geometry Axonometric drawing Practice: Drawing in three dimensions: axonometry	12
6	Perspective drawing	Lecture: Basics of Descriptive Perspective drawing Practice: The centrality of point of view: perspective exercises	10
7	Architectural communication and digital storytelling	Lecture: Architectural communication and digital storytelling Practice: Digital tools for architectural storytelling, exercises and practice	6
8	Digital modeling	Lecture: physical and digital maquette Practice: Physical and digital modeling: tools, techniques and exercises	6

四、教学安排详表

Teaching Arrangements

序号	教学内容 Teaching contents	学时分配 Credit Hours	教学方式 Teaching Methods	教学要求 (知识要求及能力要求) Learning Objectives (knowledge objective & ability objective)	对课程目标的支撑关系 Related to which Course Objective
1	从视觉思维到建筑制图	3	讲授	建立从视觉思维到建筑制图的初步认识	1,2
2	工作室组成、参考书目、案例研究简介、素描本要求；小组工作要求、小组建立；第一次临时徒手画	3	实践	1. 了解课程概况 2. 明确素描本作业基本要求 3. 建立学习小组	1,2

				4. 完成第一次课堂徒手画 5. 本周每日一页素描本课外作业	
3	视觉思维的语言学基础	3	讲授	了解视觉思维的语言学基础	1,2
4	魏森霍夫实验区案例简介	3	实践	1. 了解魏森霍夫实验区案例的概况、建设背景及其建筑学发展历程中的意义 2. 了解若干建筑大师代表作	1,2
5	绘图惯例和建筑表达工具-度量和测量工具	3	讲授	1. 了解建筑绘图的基本要求、惯例表达思想 2. 了解建筑绘图常用的度量和测量工具	1,2
6	建筑和城市徒手画	3	实践	1. 对自己居住的房间、建筑和小区进行徒手画 2. 本周每日一页素描本课外作业	1,2
7	画法几何基础-正交投影(第1部分)	3	讲授	1. 掌握正交投影的基本原理(第1部分) 2. 了解正交投影的基本表达方法(第1部分)	1,2
8	按比例绘制的图纸:平面图、剖面图和立面图(第1部分)	3	实践	1. 练习绘制平面图、制剖面图、立面图(第1部分) 2. 具备绘制正交投影图的能力(第1部分) 3. 逐步完成房间-建筑-校区 A3 绘图作业	1,2
9	画法几何基础-正交投影(第2部分)	3	讲授	1. 掌握正交投影的基本原理(第2部分) 2. 了解正交投影的基本表达方法(第2部分)	1,2
10	按比例绘制的图纸:平面图、剖面图和立面图(第2部分)	3	实践	1. 练习绘制平面图、制剖面图、立面图(第1部分) 2. 具备绘制正交投影图的能力(第2部分) 3. 逐步完成房间-建筑-校区 A3 绘图作业	1,2

11	画法几何轴测图基础(第1部分)	3	讲授	<ol style="list-style-type: none"> 1. 掌握轴测图的基本原理(第1部分) 2. 了解轴测图的基本表达方法(第1部分) 	1,2
12	三维绘图-轴测图(第1部分)	3	实践	<ol style="list-style-type: none"> 1. 练习绘制轴测图(第1部分) 2. 具备绘制轴测图的能力(第1部分) 3. 逐步完成房间-建筑-校区 A3 绘图作业 	1,2
13	画法几何轴测图基础(第2部分)	3	讲授	<ol style="list-style-type: none"> 1. 掌握轴测图的基本原理(第2部分) 2. 了解轴测图的基本表达方法(第2部分) 	1,2
14	三维绘图-轴测图(第2部分)	3	实践	<ol style="list-style-type: none"> 1. 练习绘制轴测图(第2部分) 2. 具备绘制轴测图的能力(第2部分) 3. 逐步完成房间-建筑-校区 A3 绘图作业 	1,2
15	画法几何透视图基础(第1部分)	3	讲授	<ol style="list-style-type: none"> 1. 掌握透视图的基本原理(第1部分) 2. 了解透视图的基本表达方法(第1部分) 	1,2
16	中心性视角-透视练习(第1部分)	3	实践	<ol style="list-style-type: none"> 1. 练习绘制透视图(第1部分) 2. 具备绘制透视图的能力(第1部分) 3. 逐步完成房间-建筑-校区 A3 绘图作业 	1,2
17	画法几何透视图基础(第2部分)	2	讲授	<ol style="list-style-type: none"> 1. 掌握透视图的基本原理(第2部分) 2. 了解透视图的基本表达方法(第2部分) 	1,2
18	中心性视角-透视练习(第2部分)	2	实践	<ol style="list-style-type: none"> 1. 练习绘制透视图(第2部分) 2. 具备绘制透视图的能力(第2部分) 3. 逐步完成房间-建筑-校区 A3 绘图作业 	1,2
19	建筑学交流与数字讲述	3	讲授	<ol style="list-style-type: none"> 1. 了解建筑学交流和数字讲述的基本概念 2. 了解建筑学交流和数字讲述的基本方法 	3,4

20	用于建筑学交流的数字工具, 练习和实践	3	实践	练习和实践建筑学讲述的数字工具	3,4
21	物理和数字模型	3	讲授	1. 了解建筑学数字建模的基本概念 2. 了解建筑学数字建模主流商业软件 3. Rhino (犀牛) 软件应用讲解	3,4
22	物理和数字建模: 工具、技术和练习	3	实践	1. 学习 Rhino (犀牛) 软件 2. 使用 Rhino (犀牛) 软件完成小组作业 (重绘魏森霍夫实验区建筑)	3,4

注: 对课程目标的支撑关系可填写大纲中第二部分课程目标的相应序号。

The column "Related to which Course Objective" can be filled in with the number of the corresponding course objective in Part II.

序号	教学内容 Teaching contents	学时分配 Credit Hours	教学方式 Teaching Methods	教学要求 (知识要求及能力要求) Learning Objectives (knowledge objective & ability objective)	对课程目标的支撑关系 Related to which Course Objective
1	From visual thinking to architectural drawing	3	Lecture	Develop the preliminary understanding: from visual thinking to architectural drawing	1, 2
2	Studio makeup – Bibliography – Introduction to case studies – Sketch book; Introduction to group work, group formation, first ex-tempore freehand drawing	3	Practice	1. Learn about the course overview 2. Understand the basic requirements for sketchbook homework 3. Establish study groups 4. Complete the first class freehand painting 5. One page sketchbook homework everyday this week	1, 2
3	The linguistic foundations of visual thinking	3	Lecture	Understand the linguistic foundations of visual thinking	1, 2
4	Introduction to case studies: the Weissenhof experimental district in Stuttgart	3	Practice	1. Understand the general situation, construction background and significance	1, 2

				<p>of the case of Weisenhoff</p> <p>2. Learn about some masterpieces of famous architectures</p>	
5	Drawing conventions and architectural representation tools - Measuring and Survey Tools	3	Lecture	<p>1. Understand the basic requirements and convention expression ideas of architectural drawing</p> <p>2. Understand the commonly used measuring and survey tools in architectural representation</p>	1, 2
6	Architectural and urban freehand drawing	3	Practice	<p>1. Draw freehand in the room, building and residential area where student lives in</p> <p>2. One page sketchbook homework everyday this week</p>	1, 2
7	Basics of Descriptive Geometry Orthographic projection (Part 1)	3	Lecture	<p>1. Master the basic principle of descriptive geometry orthogonal projection for the room you live in (Part 1)</p> <p>2. Understand the basic expression of orthogonal projection (Part 1)</p>	1, 2
8	The drawing to scale: plans, sections and elevations (Part 1)	3	Practice	<p>1. Practice on the drawing of plan, section and elevation (Part 1)</p> <p>2. Develop the ability to draw orthographic projections (Part 1)</p> <p>3. Gradually complete the room-building-campus A3 drawing work</p>	1, 2
9	Basics of Descriptive Geometry Orthographic projection (Part 2)	3	Lecture	<p>1. Master the basic principle of descriptive geometry orthogonal projection for the room you live in (Part 2)</p> <p>2. Understand the basic expression of orthogonal projection (Part 2)</p>	1, 2
10	The drawing to scale: plans, sections and elevations (Part 2)	3	Practice	<p>1. Practice on the drawing of plan, section and elevation (Part 2)</p> <p>2. Develop the ability to draw</p>	1, 2

				<p>orthographic projections (Part 2)</p> <p>3. Gradually complete the room-building-campus A3 drawing work</p>	
11	Basics of Descriptive Geometry Axonometric drawing (Part 1)	3	Lecture	<p>1. Master the basic principle of descriptive geometry axonometric drawing (Part 1)</p> <p>2. Understand the basic expression method of axonometric drawing (Part 1)</p>	1, 2
12	Drawing in three dimensions: axonometry (Part 1)	3	Practice	<p>1. Practice on the drawing of axonometry (Part 1)</p> <p>2. Ability to draw axonometry (Part 1)</p> <p>3. Gradually complete the room-building-campus A3 drawing work</p>	1, 2
13	Basics of Descriptive Geometry Axonometric drawing (Part 2)	3	Lecture	<p>1. Master the basic principle of descriptive geometry axonometric drawing (Part 2)</p> <p>2. Understand the basic expression method of axonometric drawing (Part 2)</p>	1, 2
14	Drawing in three dimensions: axonometry (Part 2)	3	Practice	<p>1. Practice on the drawing of axonometry (Part 2)</p> <p>2. Ability to draw axonometry (Part 2)</p> <p>3. Gradually complete the room-building-campus A3 drawing work</p>	1, 2
15	Basics of Descriptive Perspective drawing (Part 1)	3	Lecture	<p>1. Master the basic principle of descriptive perspective drawing (Part 1)</p> <p>2. Understand the basic expression method of descriptive perspective drawing (Part 1)</p>	1, 2
16	The centrality of point of view: perspective exercises (Part 1)	3	Practice	<p>1. Practice on the perspective drawing (Part 1)</p> <p>2. Ability of perspective drawing (Part 1)</p> <p>3. Gradually complete the room-building-campus A3</p>	1, 2

				drawing work	
17	Basics of Descriptive Perspective drawing (Part 2)	3	Lecture	<ol style="list-style-type: none"> 1. Master the basic principle of descriptive perspective drawing (Part 2) 2. Understand the basic expression method of descriptive perspective drawing (Part 2) 	1, 2
18	The centrality of point of view: perspective exercises (Part 2)	3	Practice	<ol style="list-style-type: none"> 1. Practice on the perspective drawing (Part 2) 2. Ability of perspective drawing (Part 2) 3. Gradually complete the room-building-campus A3 drawing work 	1, 2
19	Architectural communication and digital storytelling	3	Lecture	<ol style="list-style-type: none"> 1. Understand the basic concepts of architectural communication and digital storytelling 2. Understand the basic methods of architectural communication and digital storytelling 	3, 4
20	Digital tools for architectural storytelling, exercises and practice	3	Practice	Exercises and practice on digital tools for architectural storytelling	3, 4
21	Physical and digital maquette	3	Lecture	<ol style="list-style-type: none"> 1. Understand the basic concepts of architectural digital modeling 2. Understand mainstream commercial software of architectural digital modeling 3. Teach Rhino 	3, 4
22	Physical and digital modeling: tools, techniques and exercises	3	Practice	<ol style="list-style-type: none"> 1. Learn Rhino 2. Use Rhino to complete group work (redraw the buildings in the Weissenhof experimental district) 	3, 4

五、考核方式及成绩构成 Evaluation and Composition of Grades

practical exam and multichoice test on theoretical aspects

最后的成绩是 2 个分数的总和。

- 周期性评估（最高 40%）。
- 最终评估（最高 60%）。

周期性评估包括对个人和小组所做工作进行审查（每周或每两周一次）。

最终评估是对课程的理论内容和练习进展的口头陈述。

The assessment of the students is organized according to the schedule provided by the School's Academic Calendar.

The final grade is the sum of 2 marks:

- The periodic assessments (max 40%),
- The final assessment (max 60%).

The periodic assessments consist in the review (weekly-biweekly) of the work carried out individually and in groups.

The final assessment is based on an oral presentation about the theoretical contents of the course and the development of exercises.

<本部分构成及考试方式可根据具体课程定制> Depending on the

course

大纲制定者: _____

大纲审核者: × × ×

最后修订时间: 年月日