

**Bachelor of Arts HES-SO in Conservation, 180 ECTS, 2015-2018**

Module	Coef unit	Module / Unit titel	Courses description	Teacher	Course hours BA <sup>2</sup>	ECTS pro Semester					
						S1	S2	S3	S4	S5	S6
<b>AC1</b>	<b>180</b>	<b>Conservation 1</b>				6					
AC1.1	0.4	The collection and its environment 1	Physics of buildings	TJA	7						
			Environmental basics: Relative Humidity, Temperature. Measurements and tools	TJA	5						
			Basics in conservation-restauration 1. Principles of preventive conservation. Interaction of objects with their environment.	NDU	16						
AC1.2	0.3	Visual documentation 1	Computer tools	TJA	8						
			Drawing	PMY	8						
			Photography in studio and on site	PMY	8						
AC1.3	0.3	Introduction to materials used for artifacts 1	Ceramic, glass 1 - material, technology and degradation processes	KVA	16						
			Mosaics 1 - material and degradation processes	Chantriaux	4						
			Polymers and resins 1 - material and degradation processes	ADO	8						
<b>AH1</b>	<b>180</b>	<b>Humanities 1</b>				6					
AH1.1	0.3	History of art and culture 1	From the "big bang" to our days, geographical survey, Antiquity	CSP	8						
			Paleolithic, neolithic, protohistory	AGM	16						
AH1.2	0.4	Written documentation and methodology 1	Method of documentation, assessment of the conditions of conservation, establishment of a repository and choice of indicator	NDU	28						
AH1.3	0.3	Interdisciplinary studies 1	Ethnographic object and Society	AGM	8						
			Work of art and History : case studies	CSP	8						
			Technological objects and history 1	PYC	8						
<b>AN1</b>	<b>180</b>	<b>Natural sciences 1</b>				6					
AN1.1	0.5	Basics in Chemistry 1	Composition and binding in materials ; Stoichiometry Thermodynamic and kinetic of chemical reactions ; Chemical equilibrium Acids and Bases ; Redox reactions	ADO	36						
AN1.2	0.3	Basics in Physics 1	Heat, Geometrical Optics. Revisions in Algebra and Geometry	FGO	24						
AN1.3	0.1	Introduction to properties of materials 1	Inorganic material	ADO	12						
AN1.4	0.1	Health and safety, regulation	Toxic agents, health and safety in conservation, laboratory safety Documentation of laboratory work Laboratory materials and laboratory instruments	Negri	8						
<b>AW1</b>	<b>180</b>	<b>Conservation workshop 1</b>				6					
AW1.1	0.4	Environmental basics	Monitoring and monitoring tools, data capture with Excel.	TJA	44						
AW1.2	0.4	Ceramic	Project management : examination, diagnostic, propositions, documentation Cleaning Adhesives and coating Labelling Visits : handworkers, workshops, museum collections, laboratories	KVA	64						
AW1.3	0.2	Moulds and copies		Hug	36						
<b>AW2</b>	<b>180</b>	<b>Conservation workshop 2 - external</b>				6					
AW2		Collections conservation assessment. Handling, transportation, storage, packing		TJA	4.5 weeks						
<b>AC2</b>	<b>180</b>	<b>Conservation 2</b>					6				
AC2.1	0.3	Cultural heritage : collection and building	Terms and language in conservation	ARB	8						
AC2.1		Cultural heritage : collection and building	Methods of documentation work : literature and library research, study and review of sources, references and citations, text analysis	ARB	12						
			Environmental basics: light and pollutants. Measurements and tools	TJA	3						
AC2.2	0.4	Visual documentation 2	Computer : image processing	PMY	8						

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			Drawing	PMY	8						
			Photography (and image processing)	PMY	8						
AC2.3	0.3	Introduction to materials used for artifacts 2	Vegetal, animal and composite materials - materials, technology and degradation processes	ANG	20						
<b>AH2</b>	<b>180</b>	<b>Humanities 2</b>					6				
AH2.1	0.3	History of art and culture 2	Antiquity, Early Middle Ages, Late Middle Ages	CSP	24						
AH2.2	0.4	History, ethics and theory of conservation	Method of documentation, assessment of the conditions of conservation, establishment of a repository and choice of indicator	NDU	28						
AH2.3	0.3	Interdisciplinary studies 2	Ethnographic object and Society	AGM	8						
			Technological objects and history 2	PYC	8						
			Art History	CSP	8						
<b>AN2</b>	<b>180</b>	<b>Natural sciences 2</b>					6				
AN2.1	0.5	Basics in Chemistry 2	Oxydation and reduction ; Electrochemic ; Molecules ; Organic chemistry	ADO	36						
AN2.2	0.3	Basics in Physics 2	Introduction to electromagnetism	FGO	24						
AN2.3	0.2	Introduction to properties of materials 2	Organic materials	ADO	12						
<b>AW3</b>	<b>180</b>	<b>Conservation workshop 3</b>					6				
AW3.1	0.6	Climate studies. Collections conservation assessment. Long term storage materials. Handling and transportation.		TJA	96						
AW3.2	0.3	Material working, mounting, boxes, packing, working with synthetic polymers	Packing 1 : storage	Boulangé	48						
AW3.3	0.1	Materials identification tests		ADO	16						
<b>AW4</b>	<b>180</b>	<b>Conservation workshop 4 - external</b>					6				
AW4		Collections conservation assessment		TJA	4.5 weeks						
<b>BC1</b>	<b>180</b>	<b>Conservation 3</b>			<b>87</b>			6			
BC1.1	0.6	Managing the collection and its environment 1	Compatibility of storage and exhibition materials	ADO	12						
			Origin and sensitiveness (interactions)	NDU	8						
			Photography	PMY	16						
			Basics in conservation-restauration 2	RBE	12						
BC1.2	0.2	Technology of artifacts 1	Composite mecanisms - technology	TSC	4						
			Metal and alloys 1 - materials and technology	RBE	8						
			Metal and alloys 2 - structure and degradation processes	VBO	10						
BC1.3	0.2	Introduction to degradation processes 1	Architecture, stone, mortar, wall paintings 2 - Materials, technology and degradation processes	Guyot	11						
			Polymers (artificial and synthetic materials) - Materials and degradation processes	Ramel	6						
<b>BH1</b>	<b>180</b>	<b>Humanities 3</b>			<b>62</b>			6			
BH1.1	0.4	History of art and culture 3	Late Middle Ages, Renaissance, 17 <sup>th</sup> to 18 <sup>th</sup> Century	Celio	24						
BH1.2	0.2	Written documentation and methodology 2	Terms and language of conservation (8h). Aims, documentation forms, permanence of information (6h).	RBE	14						
BH1.3	0.4	Interdisciplinary studies 3	Heritage objects : the Ethnologist point of view	AGM	8						
			Work of art and heritage	Celio	8						
			Scientific and technological heritage	PYC	8						

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<b>BN1</b>	<b>180</b>	<b>Natural sciences 3</b>			<b>64</b>			6			
BN1.1	0.4	Chemistry for conservation 1	Organic chemistry; Organic Nomenclature (IUPAC)" Materials with particular structure ; Polyatomic ions in gypsum, chalk and substance containing ammonium ions Chemical complexes ; Atomic and molecular crystals Glass and glasses' corrosion ; Silicate structures and chemistry ; Water glass, silicic acid and silicic acid esters ; Silicones	ADO	24						
			Laboratory techniques: weighting and laboratory balances Pipettes and their use Solutions and dilutions	ADO	4						
BN1.2	0.4	Basics in Biology 1	The living : plant and animal cells, protozootes, microorganisms, minerals Biological materials : chemistry and technical aspects of these substances Biological substances used in arts and crafts and in conservation-restoration	AME	24						
BN1.3	0.2	Introduction to instrumental analysis	Photo, UV, NIR, X-Ray, Radiography, IR- Thermography Thermography Applications in art technology	Degrigny	12						
<b>BW1</b>	<b>180</b>	<b>Conservation workshop 5</b>						6			
BW1.1	0.4	Composites : dismantling 1		TSC	64						
BW1.2	0.2	Basics in woodworking		CBT	40						
BW1.3	0.3	Material working, wood working, metal working, mounting, boxes, packing, working with synthetic polymers		GRA	56						
BW1.4	0.1	Polymers: artificial and synthetic materials - identification and condition assessment		Ramel	16						
<b>BW2</b>	<b>180</b>	<b>Conservation workshop 6 - external</b>						6			
BW2		Climate control, storage and display conditions, packing and transportation. Survey, assessment and management. Evaluation of storage and display conditions.		VBO	4.5 weeks						
<b>BC2</b>	<b>180</b>	<b>Conservation 4</b>						6			
BC2.1	0.2	Visual documentation 3	Computer : data processing, computer graphics and pictures	PMY	12						
BC2.2	0.6	Technology of artifacts 2	Sculpture and painting - Materials, technology and degradation processes	ANG	16						
			Paper, Photography - materials, technology and degradation processes	Dobrusskin	8						
			Textiles 1 - materials and degradation processes	Vogt	8						
			Textiles 2 - technology	Schorta	4						
			Pigments and dyes	Degrigny	3						
BC2.3	0.2	Introduction to degradation processes 2	Collection assesment : Storage plans and management, calcul of space and volume	TJA	12						
<b>BH2</b>	<b>180</b>	<b>Humanities 4</b>						6			
BH2.1	1	History of art and culture 4	17th to 18th Century, 19th Century, 20th and 21st Centuries	Celio	24						
BH2.2	1	Legal aspects, business and work management in conservation	Business and work management in conservation ; Organisation and legal forms of a company; Taxes, financing, administration,	Ludwig	16						
			Legal aspects	Fischer	8						
BH2.3	1	Interdisciplinary studies 4	Ethnographic objects in museums	AGM	8						
			Work of art and museums	Celio	8						
			Scientific and technical objects in museums 1	PYC	8						

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<b>BN2</b>	<b>180</b>	<b>Natural sciences 4</b>							6		
BN2.1	0.4	Chemistry for conservation 2	Atomic and molecular orbitals; Hybridization; Chemical constitution and conformation; Organic compounds and reactions; Study of several organic compounds (composition, properties and degradation): Terpens; Natural resins and glues; Adhesive principles; Drying oils; Proteins and proteic mediums; Cellulose and derivatives; Starch; Synthetic polymers.	ADO	36						
BN2.2	0.2	Basics in Biology 2	Interpretation of cultures, preparation and macroscopic identification of bacteria and fungi Microscopy and measurements of microorganisms The breathing of fermentations : cause of biodegradation, ecological balance, eradication Interpretation of the sulphur cycle bacteria, biodegradation of stone Preparation of antibiotic tests Interpretation of antibiotic tests	AME	12						
BN2.3	0.2	Introduction to microscopy	Introduction to microscopy for conservators	AME	12						
BN2.4	0.2	Basic concepts of scientific analysis	An elementary approach to analytical techniques that are used to study the variety of materials and phenomena in the conservation of art objects Basic concepts of scientific analysis Overview across the main groups of analytical techniques : imaging techniques, chemical analysis; age-dating techniques; material testing An advanced approach to analytical techniques with emphasis on available instrumentation (FT-IR, Raman, REM-EDS, XRF, XRD, TGA, DSC, EPMA, PLM, chromatography, Laser : MALDI, LIBS, LIF) and datation (dendochronology, 14C, thermoluminescence) Theoretical principles of the techniques Aspects from sample preparation through to data interpretation, Material testing	Degrigny	12						
<b>BW3</b>	<b>180</b>	<b>Conservation workshop 7</b>							6		
BW3.1	0.4	Material working, wood working, metal working, mounting, boxes, packing, working with synthetic polymers		TSC/GRA	82						
BW3.2	0.3	Material working, wood working, metal working, mounting, boxes, packing, working with synthetic polymers	Packing 2 : transport	Boulangé	60						
BW3.3	0.1	Managing collections and their environment	Collection assesment. Storage plans and management. Showcases conception project	TJA	26						
BW3.4	0.2	Colour and retouching		PMY	32						
<b>BW4</b>	<b>180</b>	<b>Conservation workshop 8 - external</b>							6		
BW4		Climate control, storage and display conditions, packing and transportation. Survey, assessment and management. Evaluation of storage and display conditions.		VBO/TJA	4.5 weeks						
<b>CC1</b>	<b>180</b>	<b>Conservation 5</b>							6		
CC1.1	0.2	Advanced studies in technology, degradation and conservation of cultural heritage objects - metal and alloys	Archaeological and historic metals	VBO	14						
			Modern metal alloys	TSC	8						

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CC1.2	0.1	Advanced studies in technology, degradation and conservation of cultural heritage objects - ceramic and glass	Ceramic, glass	KVA	16						
CC1.3	0.2	Advanced studies in technology, degradation and conservation of cultural heritage objects - organic materials	Paleoecology	AME	12						
			Organic materials	ANG	14						
CC1.4	0.1	Collections management systems and documentation in CR (advanced)	Collections management systems and documentation in CR (advanced)	Brodard	14						
CC1.5	0.1	Advanced course in physics	Introduction to Nuclear Physics : Structure of nucleus, nuclear fusion and fission, radioactivity	FGO	12						
CC1.6	0.3	Managing collections and their environment 2	Risk analysis	TJA	8						
				von Lerber	16						
				Sauvagnargues	16						
<b>CH1</b>	<b>180</b>	<b>Humanities 5</b>								6	
CH1.1	0.4	Interdisciplinary studies 5	Archaeological artefacts	AGM	8						
			Scientific and technological objects in museums 2	PYC	8						
			Art History	Celio	8						
CH1.2	0.2	Archaeology	Archaeological artefacts	AGM	16						
CH1.3	0.4	Scientific revolution and experimental science		FGO, PYC	32						
<b>CW1</b>	<b>180</b>	<b>Conservation workshop 9</b>								6	
CW1.1	0.8	Glasses	Glasses	KVA	64						
CW1.2	0.2	Security and safety, risk assessment	Security and safety : management, control, equipment	TJA	14						
<b>CW2</b>	<b>180</b>	<b>Conservation workshop 10</b>								6	
CW2		Metal and alloys		VBO	92						
				TSC	36						
<b>CW3</b>	<b>180</b>	<b>Conservation workshop 11</b>								6	
CW3		Basics in cleaning of organic materials		CBT	112						
<b>CC2</b>	<b>360</b>	<b>Bachelor thesis</b>									12
CC2		Bachelor thesis		RBE, TJA, TSC, VBO	9 weeks						
<b>CW4</b>	<b>180</b>	<b>Conservation workshop 12</b>								6	
CW4		Approach of technical objects		TSC/CBT	120						
<b>CW5</b>	<b>180</b>	<b>Conservation workshop 13</b>								6	
CW5		Disaster response		Kissel, von Lerber, NDU, TJA, TSC, etc.	128						
<b>CW6</b>	<b>180</b>	<b>Bachelor thesis preparation</b>								6	
CW6		Bachelor thesis preparation		RBE, TJA, TSC, VBO	128						

<sup>1</sup>SWH = Student Workin Hours, coef. = ponderation of the unit

<sup>2</sup>1 course hour = 60 minutes