SECRETS de Maîtres

INTRODUCTION TO MECHANICAL ART

ASSOCIATION MEC-ART
LA PASSION EN MOUVEMENT

What is Mechanical Art?

Mechanical Art combines science and creativity to produce unique works endowed with mechanical movement. It encompasses fields such as artistic watchmaking, automata, kinetic sculptures, and music boxes. The goal is to use precision mechanics in an artistic way, eliciting wonder, awakening the senses, the emotions, or the intellect.
Artisanal watchmaking, which flourished in the French-Swiss Jura Arc from the 17th century onward, played a crucial role in the development of Mechanical Art. In the 18th century, the region saw its skills and know-how diversify toward traditional artistic automata and music boxes. Over time, and through ongoing innovation, these creations evolved into complex mechanical works with multiple and surprising functions. Today, artists and craftspeople continue to uphold this tradition.

In summary, Mechanical Art fuses mechanical precision and artistic creativity, with a history reaching back to the Renaissance and contemporary artisans who preserve this unique savoir-faire.

Since 2020, the know-how of Mechanical Watchmaking and Mechanical Art have been inscribed on UNESCO's Representative List of Intangible Cultural Heritage of Humanity. Sainte-Croix is the only place in the world where all these skills are concentrated within such a small territory.

Introduction to Mechanical Art

What if you, too, entered into the secrets of the Masters?

Rooted in tradition, in Sainte-Croix Mechanical Art becomes far more than a skill: it is lived as an experience, a bond, a shared emotion.

Sainte-Croix, the Cradle of Mechanical Art, hosts a unique immersive training that goes well beyond technical learning. It is a rare experience combining transmission, encounters, and exploration. For one month, you enter the workshops of master artisans to discover the secrets of the perfect gesture, of mechanical precision, and of functional beauty. You work with the material, assemble, adjust, and craft your own "school piece." But the adventure does not end at the workbench.
Each week, you discover emblematic manufactures, inspiring museums, and exceptional artisans who embody both tradition and innovation. These privileged encounters broaden your perspective, stimulate your curiosity, and open the doors to a solid professional network rooted in the Jura Arc and beyond.
Designers, technicians, restorers, curators, or simply enthusiasts: this training brings together diverse profiles united by the desire to learn, create, and understand. Together, you share gestures, ideas, and projects.

SECRETS de Maîtres

Where movement becomes emotion

Here, you touch the living soul of Mechanical Art. You reconnect with a territory, rare skills, and a committed community. You also enter a collective story: these crafts were inscribed by UNESCO in December 2020 on the Representative List of the Intangible Cultural Heritage of Humanity.

Create, resonate, connect.
In Sainte-Croix,
movement becomes art.

Mentor at Mec-Art

Denis Flageollet

Watchmaker

"The hand extended by a tool opens an almost limitless playground to realise a mechanical dream."

Denis Flageollet, born into a family of French watchmakers, perpetuates this heritage with passion. He settled in Switzerland to train and specialise in watchmaking and micro-mechanics, fields that have fascinated him since childhood.

He began his career at the Musée du Locle, where he immersed himself in historical watchmaking and developed a deep respect for traditional techniques.
In 1989, Denis co-founded THA *(Techniques Horlogères Appliquées)* with François-Paul Journe. Together, they developed several landmark projects, including the first *Sympathique* clock conceived for a wrist-watch for Breguet. Over the following twelve years, he oversaw the establishment of multiple workshops and the development of more than one hundred and twenty watchmaking projects.
In 2002, together with David Zanetta, Denis founded *De Bethune,* a brand that blends tradition and innovation. Drawing inspiration from watchmaking history, he also embraces modern tools such as CNC machining and 3D design to create unique timepieces.

Today, through Mec-Art, he passes on his knowledge to young people and enthusiasts, combining respect for the past with a vision for the future.

Nicolas Court

Automaton-maker, watchmaker

"Driving the mind to solve the riddle of the dream mechanism that animates a unique creation."

Nicolas Court, born in 1970 in Moutier, Switzerland, is a creator of mechanical objects that awaken dreams. Influenced from childhood by his great-uncle, he quickly developed a passion for mechanics.

After studying micro-mechanics at the Technicum of Saint-Imier, he joined THA *(Techniques Horlogères Appliquées)* in Sainte-Croix in 1989. Alongside his peers, he explored high-end watchmaking and worked notably on *Sympathique* clocks. These experiences enriched his craftsmanship. He continued his career at Dépraz, where he managed a restoration workshop for antique clocks.
In 1996, he founded his own workshop, *Arts 15*, in Sainte-Croix, where he and his team create automata, musical modules, and other high-end mechanical objects, while also restoring historical pieces. Nicolas continues to innovate while honouring tradition. His career in watchmaking and his specialisation in automata make him one of the few true watchmaker-automatists.

His devotion and multidisciplinary expertise in Mechanical Art naturally led him to become a trainer at Mec-Art.

Mentor at Mec-Art

François Junod

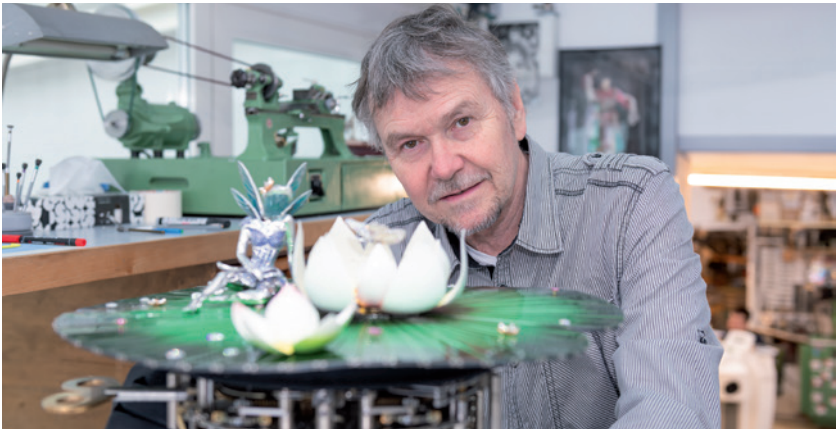
Automaton-maker, sculptor

"An insatiable curiosity to understand the mechanical genius that gives rise to the magic of movement."

François Junod, born in Sainte-Croix in 1959, studied micro-mechanics at the local technical school. He also learned the restoration of automata under Michel Bertrand in Bullet and obtained a diploma in drawing and sculpture from the Lausanne School of Fine Arts.

Since 1984, he has designed automata that unite tradition and innovation. François is known for his classical androids while also creating contemporary automata. His creations stand out for their visible mechanisms, where gears and springs contribute a poetic dimension. Alongside his own works, he is also commissioned by major luxury *Maisons* to develop and produce high-end mechanical pieces.
His workshop, filled with gears and plaster limbs, is a space where technique and art meet.
François seeks to recreate nature, while fully aware that reproducing life itself is impossible.

Through Mec-Art, he shares his rare savoir-faire with younger generations, thus perpetuating this precious art.



Mentor at Mec-Art

Benoît Augsburger

Automaton-maker

"Mechanical Art… is the power to convey emotion through mechanical energy."

Benoît Augsburger found his path by combining passion and precision. Trained at the mechanical school of Sainte-Croix, he obtained his CFC (Vocational Certificate) as a polymechanic, but it was an internship with François Junod, master of automata, that marked a decisive turning point.

There, he discovered the richness and complexity of Mechanical Art, a world where every gear tells a story. Fascinated, Benoît joined François Junod's workshop, where he refined his craft.
He explored every stage of automaton creation: renovation, design, machining, and final assembly.
Today, he masters the entire process and brings unique mechanical works to life. Each day is for him a new opportunity to learn. Under François's mentorship, he aspires to perpetuate this tradition while bringing his own vision.

For him, Mec-Art is above all a space for sharing and transmission. He exchanges with other enthusiasts the precious knowledge that enriches him every day.

Mentor at Mec-Art

Jean-Michel Bolens

Teacher, arranger

"Having a passion is not enough, you must share it, transmit it."

Jean-Michel Bolens, a self-taught music lover, is guided by a keen ear and a deep love for melody.

A native of Sainte-Croix, he began his musical journey in his hometown, a path that shaped his passions. After earning his official teaching certificate, he became a teacher while also training to teach music, a passion he has always nurtured.
His encounter with Sainte-Croix's watchmaking artisans marked a turning point. Jean-Michel discovered the world of music boxes and took part in international projects such as the giant *"Spinnradl"* boxes, reaching up to four meters in height. He also contributes to musical arrangements for watches and mechanical objects, sometimes even to their design.

Today, Jean-Michel teaches within Mec-Art, where he shares his knowledge and experience with enthusiasts. For him, transmitting knowledge is essential, and he finds great fulfilment in mutual exchange and learning. His commitment perpetuates the legacy of mechanical music while embracing innovation.

Mentor at Mec-Art

Tifaine Gallucci

Luthier

"The evolution of a technology or a heritage depends on the sharing of knowledge."

Immersed in music since childhood, Tifaine Gallucci made it his passion.

He trained at the ITEMM *(Institut Technologique Européen des Métiers de la Musique)* in Le Mans, where he obtained a CAP (Vocational Certificate) and a BMA (Art Trade Diploma) as a luthier, alternating theory and practice. Specialising in guitars and basses, Tifaine explores the potential of these modern instruments.
In parallel, he developed his own instruments, tested by musicians and specialists, aiming to improve their quality. His arrival at *De Bethune* introduced him to the world of Mechanical Art and allowed him to specialise in music boxes.

By joining Mec-Art, he shares his acoustic expertise, convinced that the exchange of knowledge is essential to technical progress. Alongside Jean-Michel Bolens, he brings to the training programs both a sharp ear and a passion for sound innovation.

Mentor at Mec-Art

Victoire Halter

Jeweler | Decorator of watch components

"In Mechanical Art, aesthetic precision is essential, even hidden mechanisms must be beautiful."

Victoire, the daughter of a watchmaker, grew up in workshops surrounded by tools and artisanal know-how. From a very young age, she developed a passion for manual work and precision.

Drawn to gemstones, she studied jewellery in Paris and worked for subcontractors of prestigious *Maisons* on the *Place Vendôme*, where she honed her skills combining creativity and rigour. Her return to Sainte-Croix marked a turning point: she turned toward high-end watchmaking, collaborating with master watchmakers on the decoration of mechanical components.
Her work, beyond aesthetics, also seeks to improve the precision of watches and automata.
Today, Victoire is committed to preserving and modernising Mechanical Art.

She believes in balancing tradition and innovation and dedicates herself to transmitting this know-how to future generations while encouraging the integration of new ideas into this unique field.

Mentor at Mec-Art

Renaud Lelièvre

Knife-maker and mechanical artist

"The magic of Mechanical Art also lies in exchange and sharing."

Renaud Lelièvre began with training in advertising design, where he learned meticulousness and precision.

He then explored various trades, developing a broad range of skills while maintaining close ties with artisans. He discovered mechanics and blacksmithing a few years ago and decided to devote himself to them to enrich his know-how. The craft of knife-making became a natural way for him to combine ancient and modern techniques, working with both wood and metal, thus merging mechanics and artistry.
Today, Renaud trains with the mechanical masters of Sainte-Croix to deepen his knowledge of mechanics applied to art. Although forging is not part of the traditional techniques of Mechanical Art, he has managed to integrate it in an original way, bringing a new dimension to mechanical creations.

At Mec-Art, his approach enriches the students' training by opening up new artistic and technical perspectives.

Mentor at Mec-Art

Boris Masur

Designer in mechanical art

"Once the fundamentals of mechanics are mastered, there are no limits to what the mind and the heart can create."

Born in 1992 in Sainte-Croix, Boris Masur completed his compulsory schooling in Sainte-Croix, Australia, and Zürich. He trained as a polymechanic apprentice at the CPNV *(Centre Professionnel du Nord Vaudois)* in Sainte-Croix.

He then pursued mechanical design studies at the Technical College of Lausanne. During this program, he completed an internship with Nicolas Court, where he designed a singing-bird automaton. After his studies, he was hired by Nicolas Court at *Arts 15*, where he contributed his technical and digital skills. He participated in projects such as mechanical horse races "Escalado", mechanical turtles with singing birds, and horological objects.
In 2021, Boris founded *Manufacture Masur Sàrl*, a Mechanical Art design office in Sainte-Croix, thus renewing the local industry.
Passionate about mechanics and kinetic movement, he sees each component as a key element to understand and innovate upon. His command of English and German facilitates exchanges within the international network of Mechanical Art.

Today, Boris represents the new generation of artisans and teaches as part of the Mechanical Art training program.

Mentor at Mec-Art

Mélyssa Ringeisen

Watchmaker

"The meeting point between the functional and the aesthetic creates something mechanically magical."

A passion for watches led Mélyssa Ringeisen to make it her profession as a watchmaker.

To fulfill her childhood dream of "working with watches", she enrolled at the *Lycée Edgar Faure* in Morteau. There, she obtained a CAP (Vocational Certificate) in two years, followed by two years to earn a BMA (Art Trade Diploma).
During her four years of study, she completed several internships, including one with Nicolas Court in clockmaking at Sainte-Croix. There, she met Denis Flageollet, who opened the doors of *De Bethune* to her. She began in prototyping, where she refined her skills in traditional manufacturing while training on *De Bethune* calibers through after-sales work. Later, Mélyssa joined the Mec-Art team of trainers.

Her passion for watchmaking continues to flourish, especially as she discovers the joy of sharing her knowledge with the participants in the training programs.

Training Objectives

At the end of this training, you will have acquired a basic knowledge of Mechanical Art in the following fields:

techniques for manufacturing components	theory
use of measuring tools	theory and practice
bench work	practice (working at a watchmaker's bench)
history of mechanical objects	theory
mechanical driving mechanisms	theory and practice
movement of levers and cams	theory and practice
sound of bells, gongs, music box combs, and serinettes	theory (serinette = small mechanical bird/music device)
basic principles of automata, music boxes, singing birds, and watchmaking	theory and practice
materials most commonly used in Mechanical Art	theory
conservation techniques	theory and practice
art history	theory
artistic and technical drawing	theory and practice
modelling and sculpture	theory and practice
welding techniques	theory
foundry and moulding techniques	theory and practice
forging techniques	theory
additive manufacturing techniques	theory
new technologies applicable to Mechanical Art	theory
3D digitisation techniques	theory
object design	theory

In addition, you will be able to describe the types of objects you encounter, analyse them for conservation purposes, and plan their transport and use safely.

You will have sufficient knowledge to follow the design or production of Mechanical Art objects alongside professional artisans, to draft the specifications for such a project, and to act as project leader for such a realisation.

Finally, at the end of the course, each participant will leave with their own school piece on which they will have worked throughout the four weeks.

Target Audience and Prerequisites

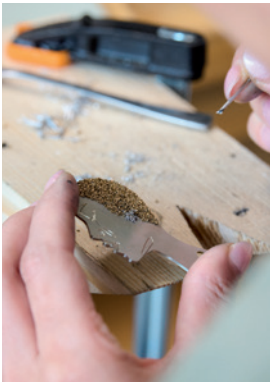
This training is intended in particular for:

- graduates of art schools or technical schools (Vocational School, Advanced Technical School, University of Applied Sciences, etc.)
- designers, interior decorators
- sales personnel or tourism office personnel
- curators, maintenance staff, technical assistants, or museum guides
- artisans such as jewellers, goldsmiths, watchmakers, or art restorers
- collectors, auctioneers, art dealers
- anyone curious to explore this fascinating world, even without prior workshop experience

Each session welcomes a maximum of 9 participants.

Prerequisites: this course is very intensive and requires strong motivation. Candidates must be of legal age, have adequate training or experience outside the field of Mechanical Art, and be able to understand and speak English.

As the number of places is limited, candidates must submit a curriculum vitae and a motivation letter in order to complete the selection process.



Course Content

Week 1 – At the Heart of the Material

Materials used in Mechanical Art: properties, functions, and both traditional and modern applications

Resonance and material behaviour. Technology of measuring instruments

Concepts of machining, mechanical manufacturing, and additive techniques; cutting tool technology; fabrication of components at the workbench

Demonstrations of forging, welding, and brazing techniques; bronze casting methods and procedures

Week 2 – At the Heart of Time

Introduction to watchmaking: theory of the driving force, gear train, and escapement regulator

Assembly of barrels, adjustment of winding axes, forging of hooks for weights, hardening and polishing of anchors, assembly and adjustment of the escapement, lubrication, hand assembly, and clock adjustment

Analysis and design of participants' objects, conservation and restoration techniques

Week 3 – At the Heart of Music

Mechanical music: types, arrangements, limitations, singing birds, bellows, triggering and stopping systems, ancient and modern technologies, study of automaton functions, theory of cams and levers, and finishing techniques

Main assembly of the musical mechanism, hammers, bending, flywheel inertia, air flywheel, worm gear, pinning of the musical cylinder, brazing of blades, assembly of stop and trigger levers, assembly of the musical cylinder, assembly of the comb blades

Week 4 – At the Heart of the Automaton

Art and automata history; various types of animated sculptures and tableaux

Customisation of the walker's head, hands, and feet; finishing (bevelling/*anglage*, brushing, etc.) of the other body parts

Assembly of the walker and joining to the school piece; fabrication of levers, fabrication of rods and springs; tracing and cutting of cams; adjustments and final assembly of all parts on the walker; mechanical finishing and fine adjustments

Teaching method

This training combines hands-on workshop practice, theoretical lessons, and visits to museums, manufacturers, and workshops directly related to the subjects taught.

Schedule and duration

The module lasts four weeks, including Saturday mornings.
Class hours : 8:00 a.m. – 12:00 p.m. / 1:30 p.m. – 6:00 p.m.

Training location

This course takes place in our workshop at the Institute of Mechanical Art - Quartier du Progrès 37 - 1450 Sainte-Croix - Switzerland.
One day of training is held at the historic forges of the Museum of Iron and Railway in Vallorbe.

Registration procedure

Registration is made through the website mec-art.ch. If the number of applicants exceeds the limit, priority is given according to the order of registration. Enrolment is confirmed only once payment has been received.

The dates and price of the next session are available on our website.

The price includes the school piece on which participants will work, a tool case, all midday meals, as well as visits and other activities.
Each participant also receives a course booklet containing, among other things, the technical drawings of the school piece.

The School Piece:
a unique mechanical, musical object

Each participant designs and assembles their own school piece, a complex and functional mechanical object integrating three modules: a mechanical clock, a metallophone-type musical movement, an animated walking automaton.

The piece is based on a set of pre-machined components supplied by partner workshops, but each participant shapes several key elements themselves: cutting parts at the bench, bending, drilling, threading, decorating the dial, forging the pendulum rod, and casting the pendulum weight in bronze - the central and visible element of the piece. This weight is first modelled in wax by the participants.

The musical movement is fully customisable. At the start of the course, participants choose a melody, which is validated by an arranger. In the third week, they learn to transcribe it into a mechanical score, to pin their own musical cylinder.

The integrated automaton takes the form of a walking figure. Each participant may personalise the head of this walker according to a profile of their choice.

Once the functioning is validated, participants complete their school piece with mechanical finishes (circular graining, sandblasting, polishing) and personal touches: choice of cord colours, shapes of flywheels, engraved or reworked motifs.

Each school piece is therefore unique, reflecting the gesture, choice, and creativity of its maker. Only one step remains: to create yours.

Why Sainte-Croix?

Perched on the high plateau of the Vaud Jura, Sainte-Croix is a region where mechanical ingenuity and craftsmanship have taken deep root. Originally, this mid-mountain region lived mainly from agriculture. But from the 17th century onward, harsh climatic conditions required a seasonal economy. To survive the long winter months, farmers developed workshop activities.

This evolution was no coincidence: the region offered natural resources favourable to the rise of mechanics. The subsoil contained easily extractable minerals; the forests provided wood and charcoal for smelting furnaces; and river water supplied hydraulic energy.Added to this was a population that was available, ingenious, and eager to supplement its agricultural income. Gradually, an artisanal culture based on precision mechanics emerged.

By the end of the 18th century, watchmaking, automata, and music boxes found fertile ground here. Mastery of metal, miniaturisation, and acoustics soon made Sainte-Croix the world capital of the music box. Names such as Reuge, Baud, and Junod are direct heirs to this living tradition.

Today, Sainte-Croix remains the only place in the world where all the trades of Mechanical Art, artisanal watchmaking, automata, clockmaking, music boxes, and singing birds, coexist on a single site, embodied by the Institute of Mechanical Art. This hub brings together manufactures, exceptional workshops, and training institutions, including the Mec-Art Association.

It is this unique concentration of know-how, resources, and technical culture that makes Sainte-Croix an essential place for transmitting, preserving, and reinventing Mechanical Art, whose crafts, along with those of watchmaking mechanics, have been inscribed since 2020 on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity.

LA PASSION EN MOUVEMENT

www.mec-art.ch

ASSOCIATION MEC-ART
LA PASSION EN MOUVEMENT