UVIC Bike Design & Manufacturing

Club Handbook

DESIGN. BUILD. RIDE

Updated 2025/09/19

Overview

Founded in February 2024, the University of Victoria Bike Design and Manufacturing Club is a passionate community of students dedicated to the art and science of bicycle manufacturing. As a student-led club, we design, prototype, and build bicycle frames, components, and manufacturing systems from scratch. Our club aims to provide students with hands-on project experience in a start-to-finish mechanical engineering process.

Mission Statement

Our club is structured as an enthusiastic, collaborative, and skill-building opportunity for members of all disciplines to constantly invent and create gnarly bicycles for our community. We are all students and soon-to-be professionals with busy lives both academically and personally, and as such, a core value of our club is a fun, loving, and relaxed bicycle culture. Members are encouraged to contribute as little or as much as they please, or even just spend time with the club and at our community events and rides!

Events & Involvement

We host a plethora of community events, competitions, fundraisers, and crawls! Some highlighted events include, Fellicitas Give Back & Game Nights, Fountain Bike Washes, Pub Crawls, Industry Workshops & Tours, Alley Cat Races, and more!

Co-op & Career Opportunities

Joining and contributing to a hands-on engineering club is a phenomenal tool for landing co-ops and careers! Many BDAM members are selected and hired directly from their club and project experience! Club involvement shows industry passion, commitment, teamwork, leadership, and invaluable real world skills!

How Bike Dreams Come to Life

I. The Idea

We constantly brainstorm “what to build next”— with anything from a slack downhill MTB or an aerodynamic road bike, to a 3D-printed alloy stem or recycled carbon pedals. The sky’s the limit, and our club provides the resources to turn our dream bikes into reality. Members share and develop ideas during meetings, over Discord, and beyond.

II. Funding

Our club is considered a charitable organization. We secure our funding through project grants, fundraisers, and through industry donations & sponsorships. For each project, a budget is created for all materials, resources, and parts.

III. Design

Once we have our project idea (i.e., a 160mm brazed mullet full-suspension), we move to the design phase. It starts in our simulation software, BikeCAD & SynBike, to decide the locations, angles, mitres, and measurements for our project bike.

IV. CAD (Computer Assisted Design)

Once we know what kind of bike to make, the next step is to create a 3D model and create part and assembly drawings. These designs show and tell our manufacturing partners and fabrication team how to create our desired parts and framing.

V. Manufacturing

Once we have our materials cut to size and shape, it’s time to melt them all together! We use MIG, TIG, Braze, and other fabrication methods to create our bikes. All members are encouraged to learn how to be one with the torch, and experienced members are always happy to help demonstrate and teach.

VI. Part Specification

We now have our bicycle! It’s time to give it a makeover. From the project budget, we buy and install the parts and components we can only dream of! Once completed, it’s time to take our machine and jib, hop, whip, and soar all over our riding community and beyond!

Software & Skills

In our industry, using the right tool for the job makes all the difference. New members are encouraged to be curious, enthusiastic, and learn some essential skills and software that turn our bikes from paper to metal. As with all new skills, experienced members are present to guide and teach the ins and outs of every tool we use for new members.

SolidWorks - Our primary computer-aided design software to model our projects in 3D, run mechanical simulations, and produce engineering drawings for frames and parts. At UVic, students in MECH 200, CIVL 200, and BME 200 are taught the essential skills for modelling and creating part/assembly drawings in SolidWorks.

BikeCAD - We use this tool to extract measurements, locations, mitre, and joints for our bicycle frame. Designed for hobbyist bike builders, this software is a fun and great introductory tool for anyone curious. It's primarily used for material procurement and dimensioning our bikes.

SynBike - This is our tool for designing and simulating our bicycle dynamics and mechanics, as well as how they will feel when ridden. Our club has access to both Pro & Free licenses, with each one having its benefits.

Introduction to SynBike

Drawings & Schematics - As engineers, creating drawings and blueprints of our parts and frames gives manufacturers and the fabrication team instructions for how to prepare our materials and construct our bike. Our club uses the Mechanical Engineering Standard, but all engineering disciplines and their respective drawing criteria are often similar and transferable.

Fabrication - This is where the magic happens! We have our cut and prepared materials, and now it's time to melt them all together and create our two-wheeled machine. We use a variety of welding methods, and members are encouraged to learn how to wield the holy torch.

Administration - Our projects wouldn't be possible without the details. Budgeting, scheduling, procuring, reporting progress, and bookkeeping are essential. Our primary software includes Excel/Google Sheets, Word/Google Docs, and other writing tools to keep us organized. All project resources, files, and digital material are kept in the club's Shared Folder on Outlook for communal and cooperative operation.

Legal & Resources

The Club Constitution

Peer/Academic Support: Engineering & Computer Science Students Society

Sexual Incident Support: Home - Sexualized violence resources and support - UVic

British Columbia Engineers & Geoscience Regulations: Code of Ethics

UVSS Clubs & Union Rules: Policy & Bylaws - UVSS - University of Victoria Students' Society

Our Club Thrives Through our Diversity & History: Culture & protocol - OVPI - UVic

Expectations & Safety

All members are expected to use club resources responsibly, ethically, and safely. This use applies to, but is not limited to, intellectual material, digital & physical material(s). In return, all members are insured and protected against eligible incidents and legal action under the UVSS, and all members are obligated to the appropriate Personal Protective Equipment (PPE) and safety resources. This applies to, but is not limited to, tools, chemicals, welding equipment, and both incomplete & complete bicycles and other projects.