Explorations 9 – Makerspace

Explorations 9 – Makerspace is course that falls under the *Applied Skills, Design and Technologies* umbrella of BC's New Curriculum. In this course students will be exposed to aspects of courses they may elect to take in their grade 10 year (Woodwork, Electronics/Robotics and/or Technical Drawing/Drafting). Through the designing and building of projects, students will gain an appreciation for 'making' processes, utilizing appropriate tools and techniques available to us in the shop to do so.

Applied Design, Skills, and Technology Courses (ADST)

The ability to design, make, acquire, and apply skills and technologies is important in the world today and key in the education of citizens for the future.

ADST curriculum is an experiential, hands-on program of learning through design and creation.

The 'Big Ideas' – overarching organizers for the development and delivery of the course

Complex tasks require different technologies and   tools at different stages

Social, ethical, and sustainability considerations impact design

Complex tasks require the sequencing of skills

Content

Upon completion of the course, students are expected to know the following:

Ideating

- Take creative risks in generating ideas and add to others' ideas in ways that enhance them
- Screen ideas against criteria and constraints
- Critically analyze and prioritize competing factors, including social, ethical, and sustainability considerations, to meet community needs for preferred futures
- Choose an idea to pursue, keeping other potentially viable ideas open

Making

- Identify and use appropriate tools, technologies, materials, and processes for production
- Make a step-by-step plan for production and carry it out, making changes as needed
- Use materials in ways that minimize waste

Applied Skills & Technologies

- Choose, adapt, and if necessary learn about appropriate tools and technologies to use for tasks
- Demonstrate an awareness of precautionary and emergency safety procedures in both physical and digital environments
- Identify the skills and skill levels needed, individually or as a group, in relation to specific projects, and develop and refine them as needed

Sharing

- Critically reflect on their design thinking and processes, and evaluate their ability to work effectively both as individuals and collaboratively in a group, including their ability to share and maintain an efficient co-operative work space

- Identify new design issues

Projects

A main project will be the focus of the course. One or more smaller projects/activities will be included time permitting.

Laminated Project – Cutting Board

The main project for this course will the designing and building of a 'laminated project', a cutting board. Students will model their projects using professional level 3D modelling software (Autodesk Fusion 360), generate a set of working plans to build it from, and finally, guided by a written procedure, use their plans and common woodworking power & hand tools to manufacture and finish it.

Modern Woodworking

In recent years, technology seems to have crept into every aspect of our lives, with the shop being no exception. Students will be encouraged to make use of technology in their project designs, through the use of computers for design generation, and the incorporation of CNC Routers, Laser Cutter/Engravers and 3D Printers in the manufacturing process. Learning how to use these technological tools can help novice Makers to achieve professional outcomes only once achievable through years of skill development as well as expand the possibilities for making!
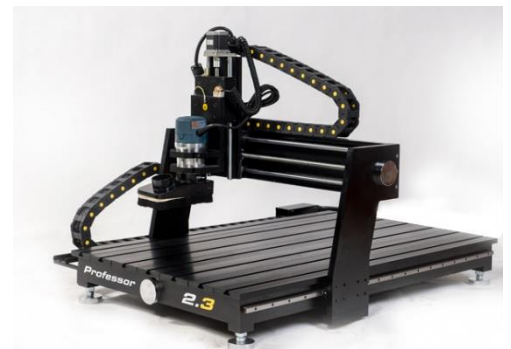
Theory

Theory study is the building of formal knowledge that allows us to do cool things. This course will not contain a lot of formal theory, but some is not only necessary, but it's good for us 😊

Theory Topics

- ☐ Measurement Systems and Applications
- ☐ Wood Species Identification
- ☐ Sustainability

Curricular Competencies

Students are expected to be able to do the following:

Understand Context – how things fit into the larger picture

Define – identify project constraints; associated criteria; potential users

Ideate – generate ideas within a project's constraints, critically analyze these, determine (ongoing) viability; identify sources of inspiration

Prototype – develop a plan; evaluate potential materials; make changes as needed; keep records of process/iterations

Test – identify sources of feedback; develop appropriate test methods; conduct testing; evaluate results and iterate as needed

Make – use tools, technologies, materials and processes; follow a step by step plan; be sensitive to waste

Share – identify methods and targets for sharing of products and processes; demonstrate; identify new goals

Grades

Grades will be calculated cumulatively and posted to My Ed BC regularly. This course runs every other day for the next 10 weeks (Term 1), approx. 60 hrs. The grade breakdown is as follows:

> Safety – 10%
>
> Design/CAD – 30%
>
> Projects – 60%

https://curriculum.gov.bc.ca/curriculum/adst/9/core

Safety

Your safety is the highest priority in the shop. Safe work practices, handling of materials, techniques and expected behaviour will be clearly conveyed and it is expected that you will demonstrate your understanding by demonstrating safe work habits at all times.

All use of power tools follows strict safety protocol as follows:

1. Students receive a demonstration on proper tool use and safety considerations
2. Students must pass a safety test achieving a minimum standard. Corrections, if needed, must be made and the teacher satisfied that understanding has been achieved. Testing that results in a grade below the minimum standard may result in the student needing a second demonstration before they can use the equipment.
3. The teacher will observe the student the first time they use a given tool
4. Students will ask for the teacher for permission immediately prior to using any power tool

Class Website (Google: 'Isfeld Makerspace')

A website is maintained to support all courses offered in this room. The direct address is http://makerspace.isfeldschool.com/, however it is often easier to simply Google 'Isfeld Makerspace' to get there. You will be using this site nearly, if not, every day and it cannot be over emphasized how important it is to remember how to get there!

Recommended

We will be utilizing online video tutorials during the design portion of the course. Having everyone use the computer's built in speakers does not work for obvious reasons. Please bring ear buds or headphones with you to use for this purpose.

Flex Block

Flex Block, the last hour of each day, is an opportunity for you to catch up on missed work/assignments and/or get a little bit of extra time if you find that you are falling behind. Please do make use of this time if you feel that you need to. Also, expect that if you have missing work/assignment, or are falling behind and you are not attending Flex Block I will request that you do so and you will be expected to attend until such time as you are caught up.

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