

State of the Fort Schuyler Makers Club and Turnover Notes



This document serves as a record of the state of the Fort Schuyler Makers Club as of Spring 2024. This includes information such as the state of the club, activities we hosted or attempted, what was successful or not so successful, and recommendations for the future of the club.

Spring 2024

A note from the outgoing club president to the incoming club leadership

I would recommend to any club president that when they turn their club over to new club leadership, that they make a written set of changeover notes detailing what the club attempted or did, how the club is structured and works, and recommendations for the future. The club is now yours to do what you want with, but I hope the systems in place and achievements made over the past year help to aid you in running the club and move it in the direction you choose to take it.

I would especially recommend creating changeover notes so that you have a record of what you had to overcome and accomplished as president of the club. I can say from experience and having seen countless other examples I found running the Makers Club, the effort and progress you make can easily be erased, so recording what you have been able to accomplish helps others to show what is possible at SUNY Maritime College, and I assure you, will save a lot of time in the future for others. Additionally, this is something you can look back on and say “that's what I did with this club”, and you bet I will be showing this to people for years to come.

Having founded the Makers Club, I also created a document detailing why I decided to create this club, and the challenges I faced in starting it. I wanted to keep a record of the time and effort I put into trying to make this club and why I felt starting this club was important. This is enclosed in a separate document since those details do not pertain to keeping the club operating.

As for running the club, we got a lot accomplished in the year it has existed, and I look forward to seeing what you do with it in the future!

Tommy Rohmann

Founder and President of the NYM Makers Club

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State of the Makers Club

As of the end of the first academic year this club has been in existence, the Makers Club has established itself as a growing force at SUNY Maritime College. The club has inspired and enabled students, lobbied the college for changes to student permissions on campus, brought new manufacturing capabilities to the school, and created a community that makes students feel like they belong at SUNY Maritime College.

Since its beginning in the Fall 2023 Semester, the Makers Club has garnered over 20 active members, with 70 people on its email list. The club has started and completed numerous projects, and won Club of the Year at SUNY Maritime College. This club was founded in response to numerous shortcomings of the college for students looking to learn about and practice engineering. The change to student access and attitude towards student progress has changed significantly since the clubs inception, and hopefully more progress can be made for years to come.

During this time in the clubs history, with little prior connections to leverage or knowledge of how utilizing school equipment could be handled, the approach for planning and carrying out activities was simply to try as much as seemed feasible and see what was actually possible. In this approach there were numerous failures, but a surprising number of projects and initiatives were completed through this approach. In the future, more routine club activities should be explored, but the effort to keep expanding and pushing the boundaries of what is possible on campus should continue to be a staple of the Makers Club.

Although the first year of operation was a resounding success, the Makers Club is still at a critical point in its existence. Without continued support and upkeep from the new leadership, the Makers Club is sure to quickly falter. The club still has yet to establish a lasting member base across all grade levels, and break in the still new systems initially implemented by its founders in order to continue to operate.

Structure of the Makers Club

Club Purpose

The purpose of the Makers Club is to advocate for student permissions and expand students' capabilities to learn about and practice the engineering, design, and prototyping process. Furthermore, the Makers Club serves as a community and support structure in which students can work together to achieve their goals individually or as a group.

Executive/Organizational Structure

The Makers Club was founded and run by Tommy Rohmann, with the following executive board and club advisors:

President: Tommy Rohmann

Vice President: Nicholas Paladino

Treasurer: Alexandra Kempski

Secretary: Carianne Sconzo

Current Primary Club Advisor: Martin Lawless

Founding Club Advisor: Charlie Munsch

Though various students and faculty members made considerable contributions of time and effort to the Makers Club, the majority of the work done to make the club run was accomplished by the club president. No responsibility structure was identified for those running the club, and roles of advertising, club organization, fundraising, event planning, student advocacy, were primarily performed as needed by the President with periodical aid from the executive board when they were available to help regardless of their positions. Future club executives should take interest in defining responsibilities for running the club, and establish a plan for training and installing new club executives for when they ultimately give up their roles in the club.

Additional key supporters of the Makers Club include:

Dean of Engineering: Leigh Winfrey, whom met with the club president weekly

Facilities Management Health and Safety Officer: Jason Vega

In this portion of these notes it would be amiss not to recognize the help received from the various staff and other students at the college:

S&E Staff, Instructors, and Professors: Bob Kalbfell, Dr. Daniel An, Dr. Alice Kwon, Hariharan Balasubramanian, John Vukelic, Dr. Kathryn Gosselin, Rolan Aragon, Alberto Martinez, Deborah Fountain-Toomer, Dr. Robert Kidd, and John Lovell

The Waterfront Staff: Capt Joe Sullivan, Emma Sarnacki, Henry Millette, Tara Foster, and Rob Crafa

Student Accounts: Pinkie Bharrat-Persaud

Students and Peers: Ryan Donohue, Sharath Peddapalli, Ethan Narofsky, Dalton Otto, Spencer Barnes, Hubert Kuchta, and everyone who helped and participated in the various club events along the way

Makers Club Operational Systems

The “systems” put in place include OneDrive files and services used by the club from various entities to for running a club, storing key club information, and performing the various functions and services offered to students through the club. See the written diagrams and documentation provided below to view how these functions are currently set up.

Logistical and Administrative Club File Storage

Included in the Club OneDrive is a Club Executive folder, and a Makers Portal folder. The club executive folder is only made visible to club executives, advisors, and select staff members, and is dedicated to files needed to run the club. This includes files such as a members list, club finances and purchase history, event planning, club artwork, advertisements, and logos.

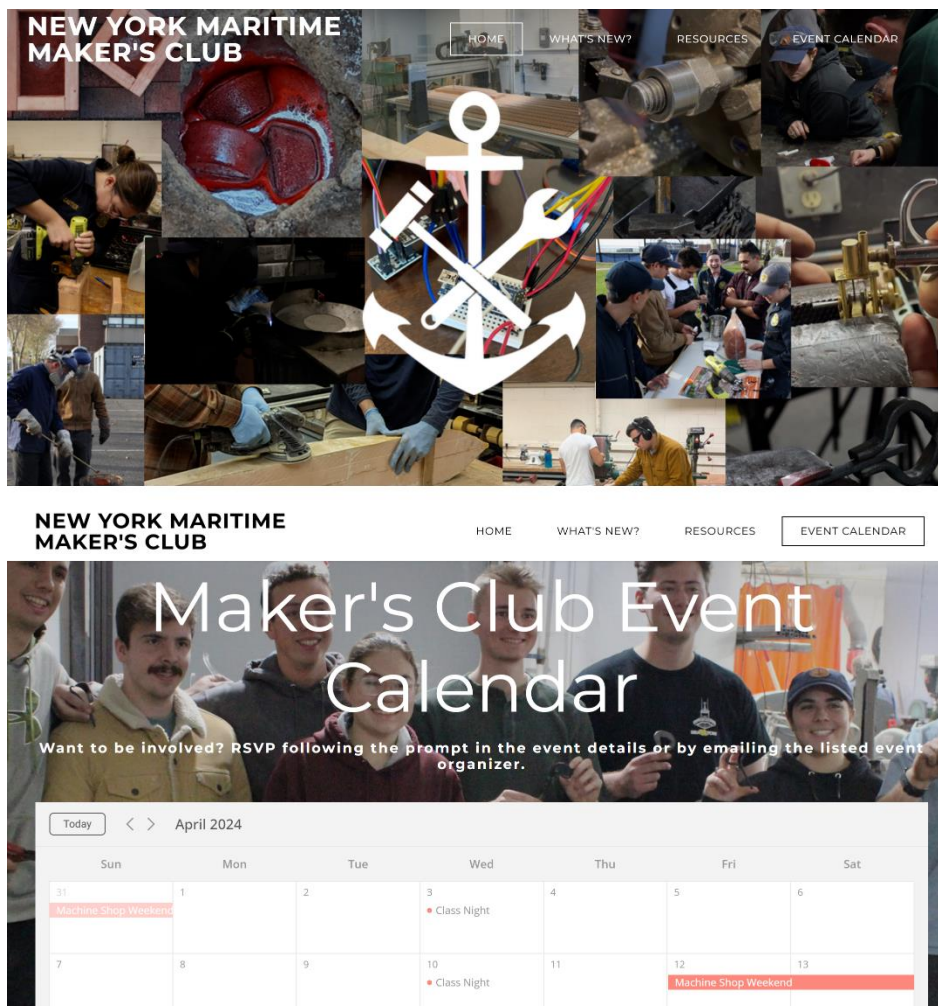
Club Tools, Functions, and Member Deliverables

Outside of the scope of files for operating as a club, the Makers Portal folder is made available to everyone to view, and includes public resources including:

- The Makers Document
- A project suggestion list for people to make suggestions for projects and club activities
- Sign up link to the Makers Club Email List
- List of tutorials, resources, and saved manuals found for college machinery
- Club project list and corresponding documentation
- Lists of personal conduct and safety expectations/requirements for participation in the club and club activities

In addition to this viewable folder, the Makers Portal contains an additional folder which was made to store documentation of projects completed by students on campus. This repository is publicly editable, and was made to inspire students to work on projects, and provide for ideas for projects to work on. These entries might include pictures of the final product, or it might have guides and drawings for students to make their own iterations of the listed project.

In addition to these documents found in the OneDrive, the Makers Club also has a website to showcase the club and recent developments related to the club, nymmakersclub.com. This website includes a blog, useful links (including links to join the club, access the Makers Document, and get to the public section of the Onedrive), and a club activity calendar, which is linked to an Outlook Calendar managed by a club executive. Note that the calendar is used in lieu of club event advertising due to the effort it takes to advertise individual events held by the Makers Club, especially given the volume of activities the club participated in.



Note that this website domain and some attached functions were paid for by the club president and reimbursed by the school. The website was made using Weebly with paid extensions. Ownership and transactions need to be continuously made as per the subscription outlined by Weebly for this service to remain operational.

Outlook, being the email service used by the college, is where the email group is managed and stored. This email list is managed manually by copying emails gathered from the Onedrive Email List Sign-Up Form, and just makes communication to the whole club easier. Unfortunately there is no way for students to add themselves to this list if desired. Furthermore, the Outlook calendar feature is used to track club events, and directly populates the website. Occasionally, this calendar does not update and needs to be refreshed manually by whoever manages the website for changes in the Outlook Calendar to be viewable on the website.

| April 2024 | | | | | | |
|------------------------|--------|---------|---------------------|----------|----------------------|----------|
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
| Mar 31 Machine Shop | Apr 1 | 2 | 3 7:30 PM CI | 4 | 5 | 6 |
| 7 | 8 | 9 | 10 7:30 PM CI | 11 | Machine Shop Weekend | |
| 14 Machine Shop | 15 | 16 | 17 7:30 PM CI | 18 | Machine Shop Weekend | |
| 21 Machine Shop | 22 | 23 | 24 7:30 PM CI | 25 | 26 | 27 |
| 28 | 29 | 30 | May 1 7:30 PM CI | 2 | 3 | 4 |

Leaflet/Advertising

Maker's Resource List





Maker's Guide to Campus
Description of what you have access to on campus, and how to access this equipment



Maker's Club Event Calendar
Get involved by working on projects. See when our planned work days are with the Maker's Club is



Submit a Work Order
Need something built or repaired, or have an idea for a project? This might be a project for the Maker's Club! Fill out the form



Maker's Club Website
See what's going on with the Maker's Club! All resources, projects, events, logs, and more can be found on the club website



Join the Maker's Club!
Scan this QR Code to get notified about the Maker's Club, including meeting times, activities, etc. Sign up to our Email List to receive updates on club events.

If a QR code does not work, or if there is any kind of error with these documents, please email thomasroh.20@sunymaritime.edu so the issue can be fixed
Version 2.1

The Makers Club has Leaflets which serve the purpose of advertising the club and as a tool for students to access club resources, mainly the Makers Document to reference. These leaflets have QR codes that students can scan for access to the following:

- Club OneDrive
- Makers Document
- Club Website
- Email Sign-Up Form

Additionally, the club advertises in a variety of ways to increase student awareness and participation:

- advertises events by submitting short messages to be read at the morning announcements
- Creating visual advertisements to be displayed on television (through the school with <https://maritime.orcatv.com/guidelines>, which wasn't particularly effective, or the TV Purchased and put up in the S&E for the purpose of advertising)
- Advertising events during meetings
- Word of mouth and just roping friends into activities
- Asking faculty members to promote the club during class if they see fit

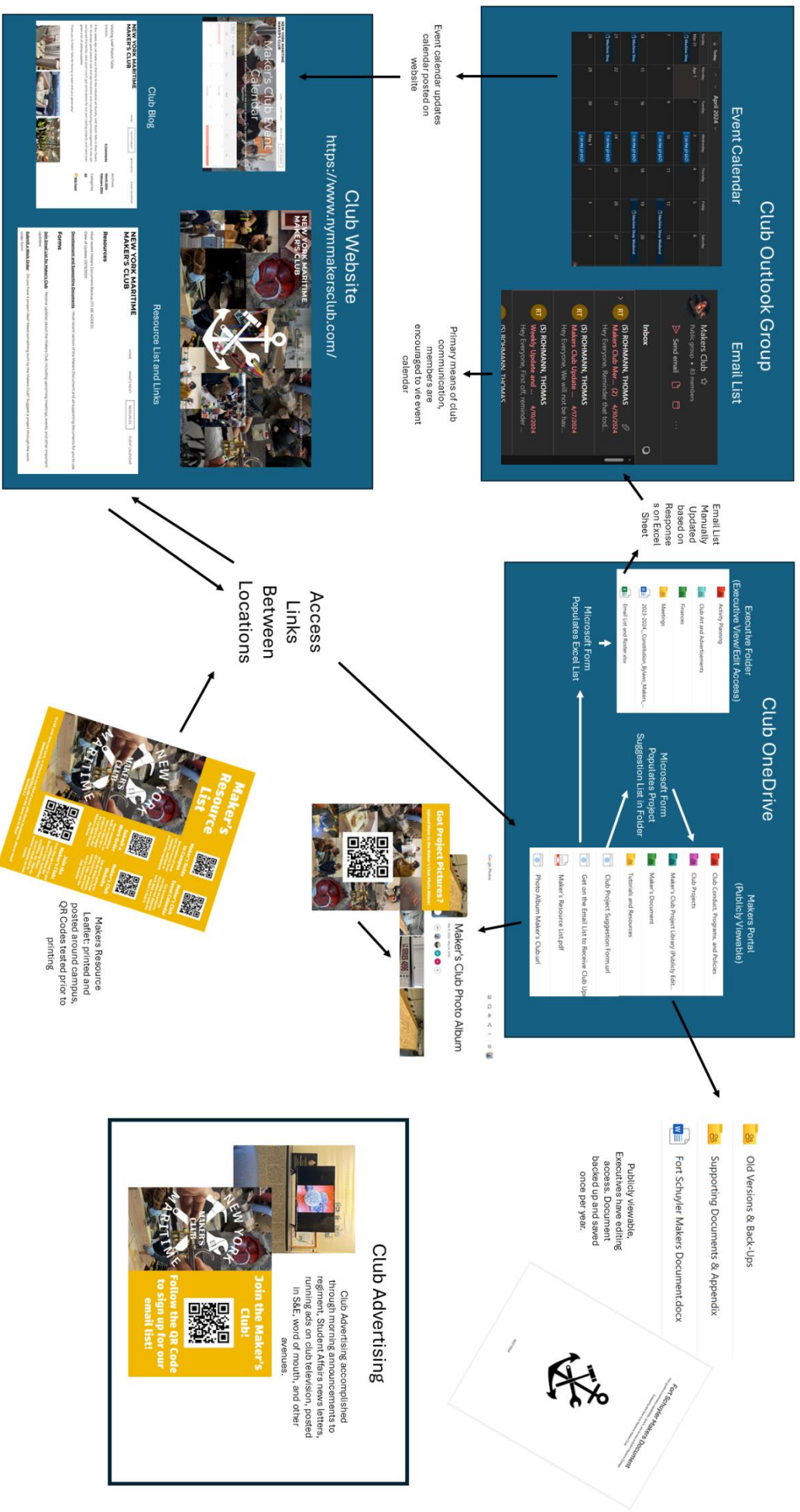


Join the Maker's Club!



Follow the QR Code to sign up for our email list!

Makers Club Operational Systems and Services

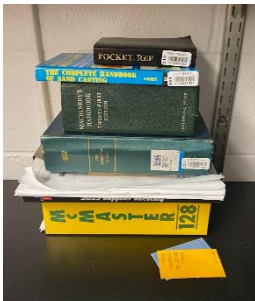


Club Assets as of Spring 2024

Listed below are the assets that are property of the Makers Club, some of their uses, and pictures of their location as of the end of the Spring 2024 Semester. This is due to factors that include that there is no storage options have been provided by the college for these materials, various items have been moved around numerous times at the end of the Spring 2024 semester, and the fact that most members familiar with the equipment no longer attend the college. Ultimately, these items and more Makers Club property should be tracked in an itemized list, and should not need as much information listed.

A Majority of the equipment owned by the Makers Club can be found in the S&E Flow Channel Room or the compressor room outside of the Transport Processes Laboratory (also the location of the CNC Machine).

Relevant Texts, Manuals, and Business Cards



Located in the Flow Channel Control Room, includes casting reference books, engineering design reference books, business cards, and parts catalogs

Hobby Electronics Equipment



Located in the Flow Channel Control Room. Contains Arduino microcontrollers, sensors, wires, LCD screens, some stepper motors, connectors, electronics tools and other various electronics equipment. All equipment in the amazon boxes on the top shelf pictured belong to the Makers Club. The Dell Laptop and charger on the shelf below are also Makers Club property.

Makers Document and Club Systems

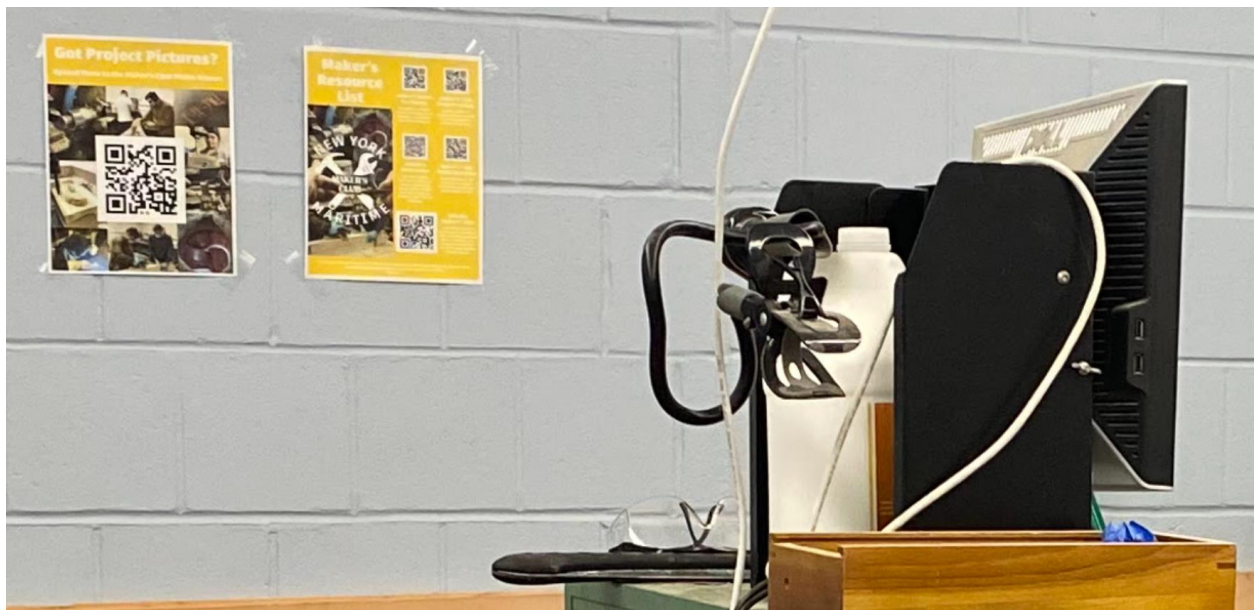
This document and file storage is mentioned numerous times throughout this paper. This is because it is extremely important to the workings and purpose of the club, and would take a long time to reproduce and reassemble from scratch. These club assets include file storage and club organizational documentation, project documentation, club pictures and artwork, club services, and much more. These documents are the efforts of numerous students to record the institutional knowledge gained through the activities the club has run over the past year. In the case of the club systems documents and systems will fail to work without deliberate action taken by the students and college.

Onedrive Folder: https://sunymaritime0-my.sharepoint.com/:f/g/personal/thomasroh_20_sunymaritime_edu/EsvSon5kpPdGIXtcQyBBMnwBY90O_mE_lEv4tGiA_8eJNA?e=7c4LFd

Club Photo Album: <https://photos.app.goo.gl/YUKU3Bm1pWXTofA9>

Club Website: <https://www.nymmakersclub.com/>

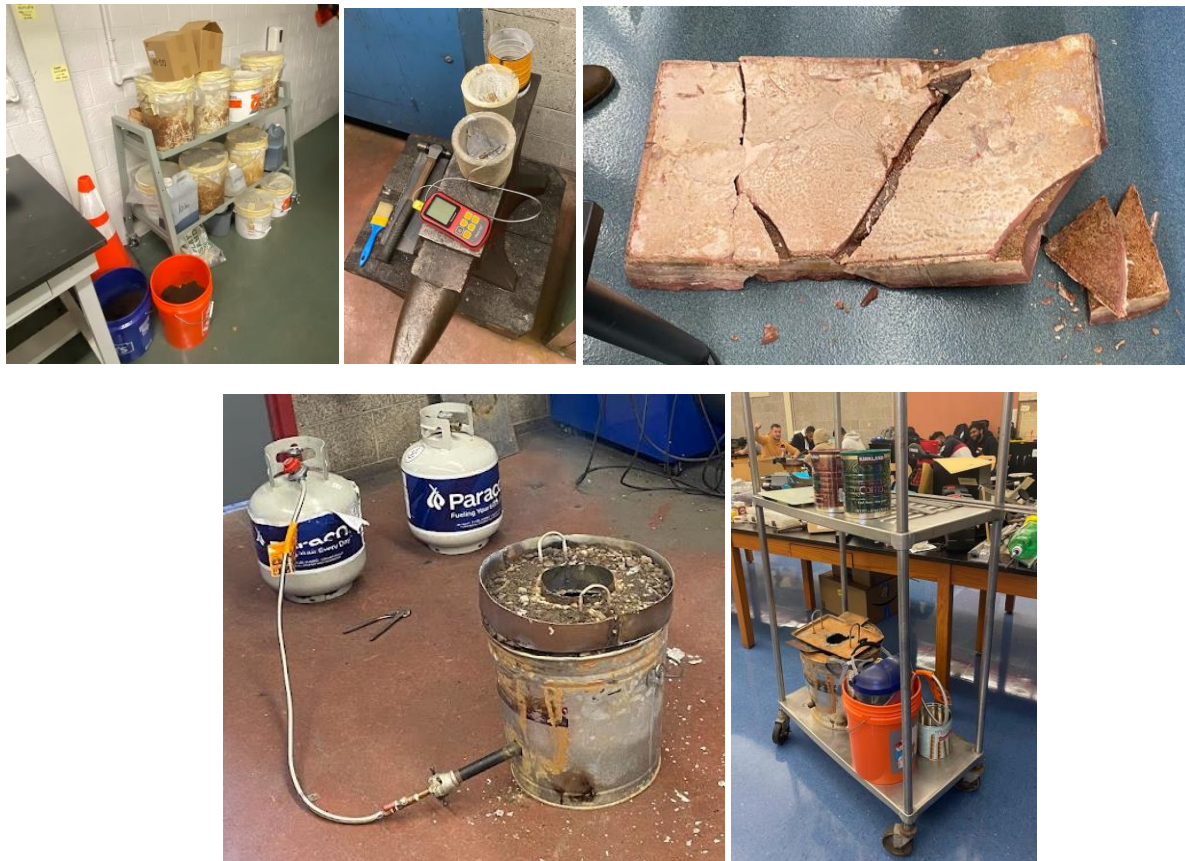
A majority of these need to be moved or have ownership transferred to a new account at the college.



Foundry Equipment

Includes numerous graphite crucibles in 6 kg and 9 kg sizes, vertical lifting and pouring tongs which can be used for both size of crucibles, reusable petrobond casting sand, silica casting sand in rough and fine grit varieties, resin and catalyst for silica sand binding, baby powder for parting compound, mold making tools, the furnace, muffin tins to pour ingots, a reach rod for removing slag and manipulating hot objects, some PPE, a fire extinguisher, and 2x 20 lb propane tanks with the Makers Club Sticker to help identify them (located in propane cage outside of the powerplant on campus).

The propane fired foundry requires repair, or should be rebuilt, but it is capable of reaching higher temperatures than the induction furnace in the machine shop. Furthermore, it can fit the larger 9 kg graphite crucibles, which supports larger castings.



Club Stickers and Branding Tool



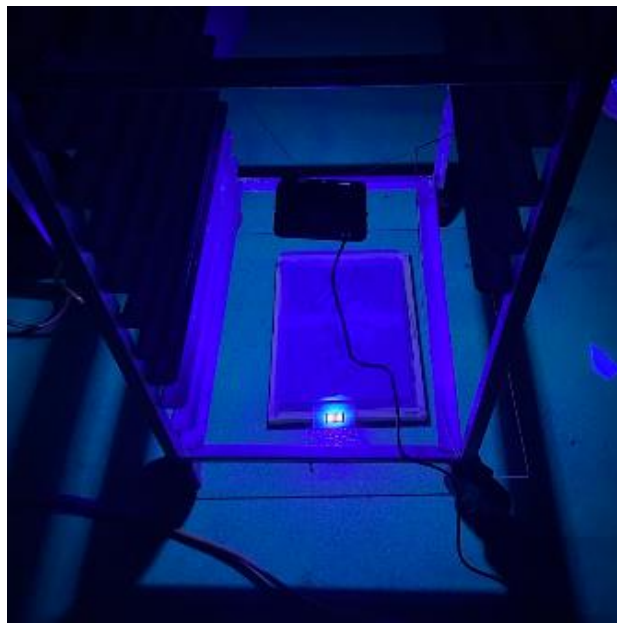
Also pictured are a box of clean rags for club and lab space use, and remnants from the mark box repair project, which was abandoned by the waterfront. All are located in the flow channel room on the work bench.

3D Printer

At the end of the Spring 2024 semester, the Makers Club had leftover funds which unused would be reallocated during the next semester. This money was used to purchase a Creality Ender-3 V3 KE 3D Printer. This printer was never assembled, and is located in the compressor room.

Screen Printing Supplies

Located in the compressor room, there are supplies to make screen prints including ink, squeegees, and screens with patterns already on them. There are also materials to make screens for other designs. All of which are kept in the compressor room.



Brother SE700 Sewing and Embroidery Machine



Used as a conventional sewing machine or for CNC embroidery. To use embroidery, download Inkscape and get the Ink & Stitch extension, which will allow you to convert SVG files into a file format compatible with the sewing machine such as .PES, which is analogous to g-code for the sewing machine.

The sewing machine is located in the S&E, but has been moved around a lot prior to the end of the year. It could be in one of the cupboard in the Strengths of materials Laboratory, or the compressor room.

Also stored with the sewing machine are stabilizer for embroidery, thread, and a few miscellaneous tools and attachments used with the sewing machine.

Scrap wood and other Materials



Scrap is especially good to have around, and you never know if you might need some. The pictured items are all Makers Club property, including a welded assembly, 2x4's, plywood used to make casting boxes, tarps, foam scraps, PVC scraps, and more. There are also useful scraps located in the CNC room.

Other Supplies in the Compressor Room

Other supplies found in the compressor room include a hot plate, heat gun, ROKU television, leatherworking tool kit, hot wire foam cutter, and other tools and materials.

Club Activities and Accomplishments in the Past Year of Operation

Format of this Section

Listed in this section includes all of the activities and accomplishments of the Makers Club during the Fall 2023 and Spring 2024 semesters. The format of these description includes a title for the activity/accomplishment followed by an overview of what the project was or goals for the given project. Each of these entries include takeaways, which describe how successful the venture was, why it was or was not successful, and recommendations for how someone trying to do something similar might go about repeating or iterating upon these projects.

Founding and Running the Club

To start a club which is recognized by the college, ten founding student members, a club faculty advisor, and executive board need to be identified. Several approval processes need to be made by student activities and the school student government for this to happen.

Once approved, the Makers Club gained access to the following:

Advertising as a club, the ability to request use of school vehicles, validation as a school club, the ability to request for funding from various sources within the college, a club financial account, and other pertinent resources and permissions. Following the founding of the club funds were raised through SGA, FSA, and the Parents Association. Funds were raised internally through the club as well in several fundraising ventures.

With becoming an established club on the college campus, the Makers Club also created their own club art and branding, which are accepted by the college as club intellectual property.



Establishing Club Systems

Overview

In order to effectively advertise, communicate, and disseminate information to club members, the typical avenues afforded to students at the school were not adequate to suit the needs of the club. Furthermore, the tools and services the makers club made available to the student body needed to be easily accessible for their use. This need prompted the making of numerous “Club Systems” across numerous platforms and include a club website, OneDrive, Google Photos, Outlook Calendar and Email Group, Microsoft Forms, and other systems/services.

Takeaways

Many of these systems put in place were found to be rather effective when used, and provided for easy access to the tools offered to the student body by the Makers Club. Unfortunately, due to the structure by which these systems worked together, which were primarily hyperlinks between services and file storage, and the failure of the college to produce a school account attached to the club, all of the links that make these systems work will no longer be operable by the Spring 2025 Semester. This is because all files and services are attached to the club president’s school email account, and all hyperlinks are routed through the OneDrive file storage attached to a student email account, which are deleted 9 months after the individual graduates from the college.

Furthermore, upkeep on these systems requires an understanding of how they work, which is described in an earlier section of this document. Without being able to update and maintain these systems, they will become obsolete and unusable. For an individual willing to maintain these club systems, Tommy Rohmann would be happy to aid in this effort where needed.

Makers Document

Overview

The Makers Document was made as a record of student access so that permissions granted and conditions of use can be found and utilized again by students looking to use school equipment. This document was made to be updated continuously, with links for students to access the most current version with viewing access. This document would also be backed up periodically to act as a benchmark for where the club was at a given time, and allow students to see what permissions were granted or lost over time.

Takeaways

This document was successful in identifying various locations around campus and in some cases defining conditions of access for students wanting to use them. This document also contains equipment lists that can help students discover the limitations of what is possible with the machinery available at the college.

There were numerous challenges faced by this document, such as nebulous answers, unresponsive faculty members, and inconsistent responses. A lot of this had to do with organizational issues at the college faculty level.

As a result, the current document needs a lot of work to achieve full utility to students. Other spaces still need to be added to the document, including but not limited to the training ship and science labs at the school. Additional information could be added such as the club tools inventory and other information. These were not added simply because it has been challenging reaching out to the staff in charge of these facilities to or negotiating conditions of space access or what that would look like.

Student Makerspace

Overview

A large problem facing the Makers Club and Student body is a lack of spaces where students can store their projects that is easy to access and close to the machinery they would be using. Additionally, basic hardware and hand tools are not available to students which make working on projects, or even just college equipment feasible. The Makers Club itself has numerous assets listed in this document, all of which are kept in various locations around the campus and need to be moved constantly. Even finding a place to work is a challenge at the college. These problems clearly point to the need for a student access Makers Space, or even just a storage space for the club and students.

This sort of space would be an ideal location to have low consequence/barrier to entry tools such as laser cutters and 3D printers for students to use when needed, but it is also not uncommon for makers spaces on college campuses to include wood working and other shop tools.

Takeaways

There were talks about a few locations which the school could convert to a makerspace, or otherwise just allocate to students to use. It began looking apparent that an unused room in the S&E would be made usable for this reason, and this made a lot of plans of the Makers Club to refurbish this space. This never came to fruition, and the lost time spent on planning for refurbishing this space was rather costly. In the future, do not make space specific plans until the space is officially given to the club with means of access. Simply define and state the needs the space needs to accommodate and formulate a plan once the space is correctly allocated.

Possible locations for a Makerspace on campus include the TIV at the waterfront, which has an unused kitchen to date. The Dean of Engineering also expressed interest in reallocating a classroom for this purpose. Ideally, a makerspace of this sort would have storage for project, work spaces and work benches, and access to utilities such as water lines, compressed air, numerous power outlets, and 3-phase power. Additional amenities might include a flammable locker and exhaust ventilation system.

Weekly Student Run Classes

Overview



We had classes on Wednesday nights giving attendees a hands on introduction on various skills including:

- CAD/3D Modelling
- 3D Printing
- Using CAM Software for CNC Machines
- Using a 3-Axis CNC Machine
- Casting: Safety and Manufacturing Process Introduction
- Casting: Mold Making

Other classes I wanted to do, but never got around to include but were not limited to:

- Basic Tools and Uses
- Basic Electronics & Intro to Microcontrollers
- Sewing and CNC Embroidery
- Wood Shop Safety

Takeaways

This was pretty successful. We got people in the door every week. We really couldn't build on classes week to week due to a lot of students not coming consistently though. For the core members who came, I think they got a lot out of it. For everyone who only came once or twice, every class we did, the people who came walked out having learned something new.

One-off/Long Form Classes

Overview

We also had student run classes during the weekend which introduced attendees to other skills. We had an introductory lesson on welding where freshmen got introduced to welding, and some students got an introduction on how to use a lathe.

There have also been offers from some faculty members on other manufacturing processes too, such as fiberglass repair at the waterfront and basic wood shop skills. Unfortunately, despite efforts to orchestrate these classes, they didn't end up happening.



Takeaways

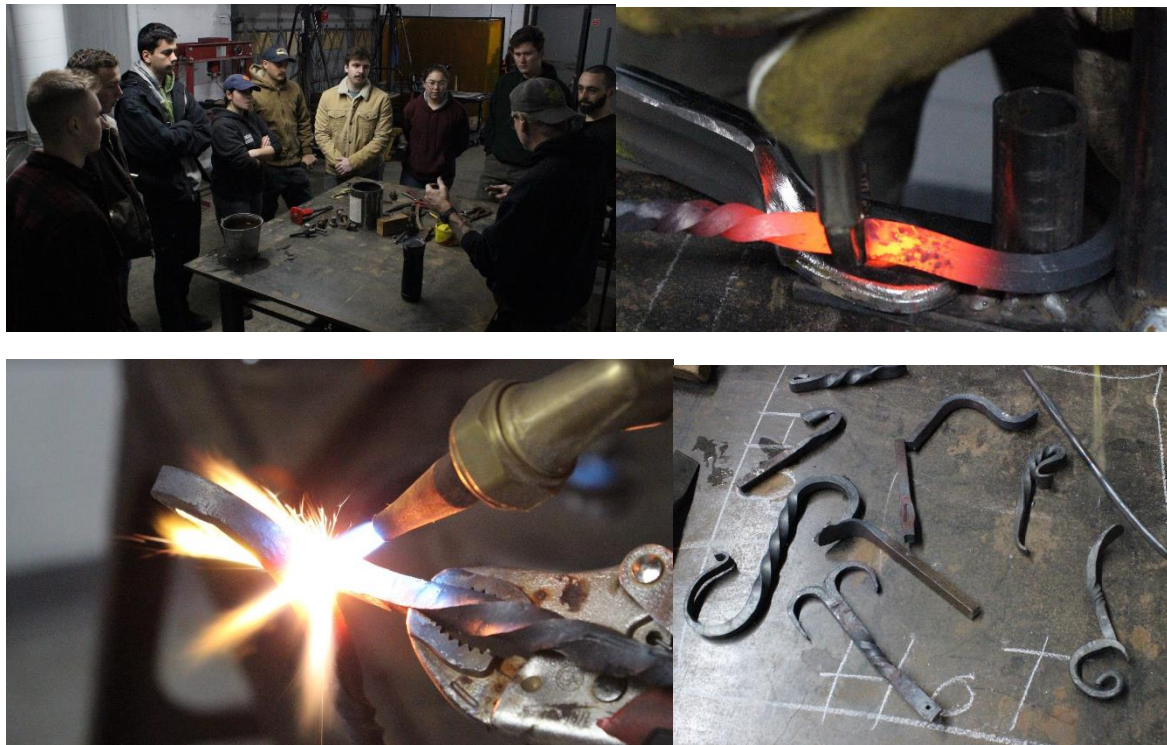
Thank you to Carianne Sconzo and Ethan Narofsky for teaching the underclassmen at this club event. If you can make these happen, they are definitely worth it, especially if you can get outside experts or faculty members to teach a class that brings skills that none of our existing club members possess.

The weekly and longer classes both give an opportunity for students to learn something that really does not take long to teach, but to give exposure can save a lot of time if learned independently and open a lot of doors for students at the college.

Blacksmithing Class at MakerspaceNYC

Overview

8 club members got the opportunity to attend a blacksmithing workshop at Makerspace NYC where we were introduced to the use of an induction forge and all made bottle openers that we could take back with us.



Takeaways

This class was great to attend. We learned a lot. That said, it cost \$1800 dollars, and only a few club members were able to attend. A large reason for holding this class was to try and establish a relationship with local Makers Spaces or other communities in the city, and maybe look at doing more classes for a reduced rate, or doing something collaborative in the future. Unfortunately, MakerspaceNYC did not seem interested in this sort of relationship.

For such a large portion of the money allocated to the Makers Club for a semester, this just did not seem like something worth doing again without good reason.

UAP & Polich Tallix, Urban Art Foundry

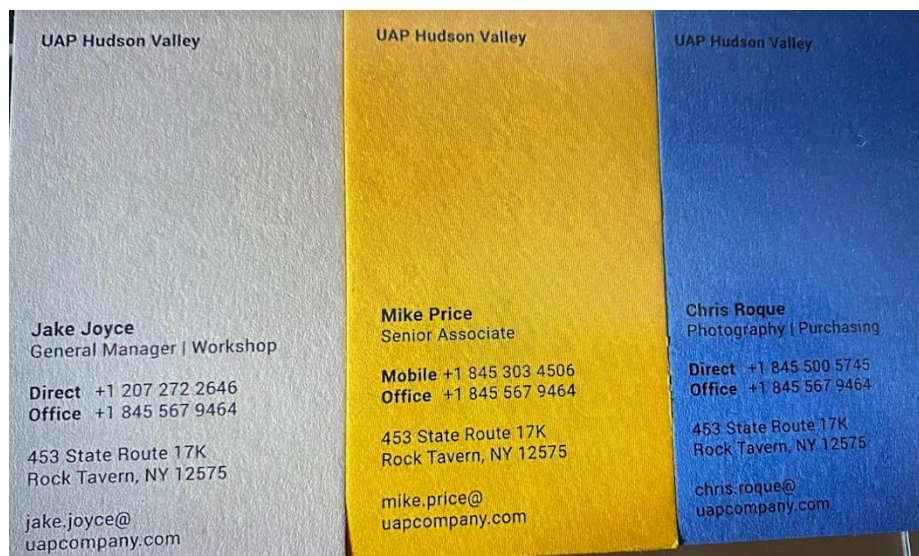
Overview

UAP is an art foundry that produces multi-million dollar art projects. As a club, we took a tour of the facility and got to ask questions about the casting process.



Takeaways

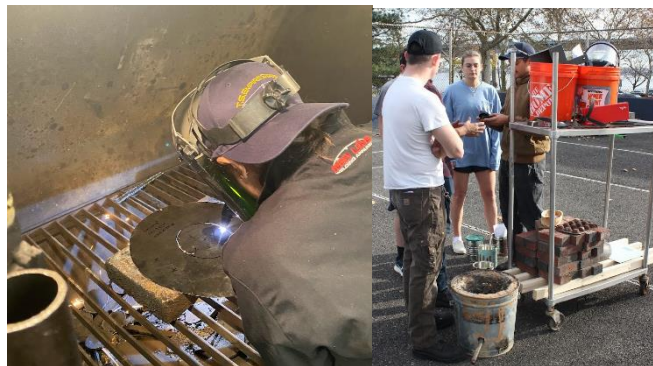
This was well worth visiting, we went twice over the fall and spring semesters last year. It was cool to see, and the staff there are very supportive of the clubs interest in casting. They even gave casting supplies to us, and offered to give advice as needed. The people here are definitely worth maintaining a relationship with. Just make sure to try casting and really use them as a resource. They have a lot of knowledge and expertise.



Making a Foundry

Overview

To do casting projects at school, we needed a furnace capable of melting metal, mold making tools, casting sand, a safety plan/equipment, and permissions to actually do a pour. We made a foundry using stainless steel scrap found in the school dumpsters, a bucket, clay rich soil, and various non-galvanized pipes and fittings, and managed a day where we got to do a casting for another project.



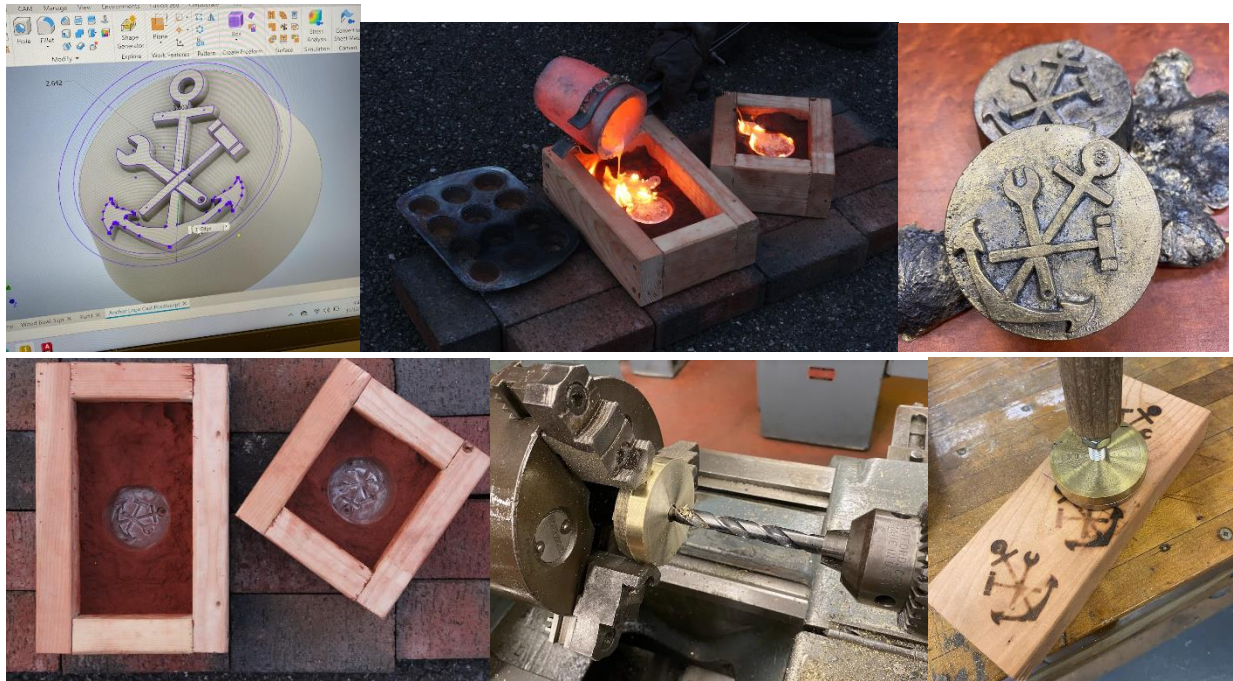
Takeaways

We made a functional foundry, and managed to cast aluminum and brass for a few projects. Unfortunately, it takes an extremely long time to move the foundry from the only places we can store it to outside the S&E, which is the only place we're allowed to operate it. The construction of the foundry is rather poor, and having to transport it from place to place results in damage. If students want to continue to pursue using the foundry, they should look into making tools for it, and making a new foundry with materials such as firebrick that might fare better being moved from place to place.

Making a Branding Iron

Overview

In this project, club members created molds from a 3D printed model which was cast from brass to make a branding iron. This tool will allow club members to decorate their work on wood projects if they wish to.



Takeaways

This project really was the picture of what the Makers Club is about. Having made the foundry, this project was the first casting project, serving as a proof of viability for this significant club project. Furthermore, this was the Makers Club doing a build project which made more tools available for students to use.

Making this tool created a unique finishing process for club members to have access to. The branding iron was used to great success on the clubs first wood project, making custom cutting boards.

Getting the Lab Furnace in the Machine Shop Fixed



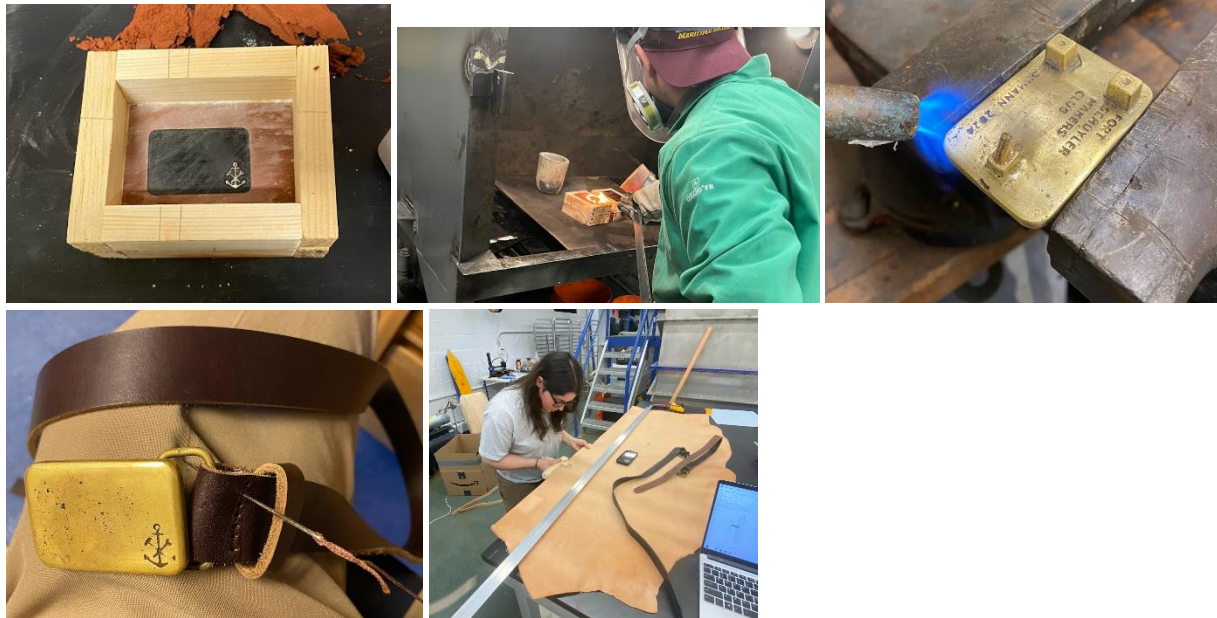
Overview

The S&E Machine Shop is host to a variety of equipment for students to use, some of which are inoperable. Among this equipment is an induction lab furnace, capable of reaching 2000° F, and could be used for countless projects. Getting this piece of equipment repaired would be invaluable to the student body.

Takeaways

This is more of an example of successful lobbying by the Makers Club achieved due to the reputation and momentum built through progress and student participation. This induction lab furnace is capable of reaching 2000° F, and could be used by students for Blacksmithing, metal casting for aluminum and copper alloys, heat treating, ceramics, and much more. Furthermore, its permanent location in the S&E Machine shop makes for convenient use when compared to the foundry the club built earlier in the year. This piece of equipment previously was left inoperable, and through talking to the machine shop and facilities department at the college, the lab furnace was repaired and used for numerous projects before the end of the academic year.

Casting Belts and Belt Buckles



Overview

This project was intended as something club members can make which was tangible, and that they can take home with them. Furthermore, this project was designed to be relatively simple yet still require 3D modelling, 3D printing, mold making, metal casting, machining, soldering, and leatherworking to complete. This way, those who finished the project could practice and demonstrate their learned skills along the way.

Takeaways

This project yielded two completed belts. One trial, and then another made by another Makers Club member. Although the project is interesting, and requires practice of most of the skills taught by the Makers Club classes, it ultimately proved to be too complex and too time consuming given the membership base's inexperience and available free time. Furthermore, the casting and other work proved to be too intricate and delicate for a first time project for various manufacturing processes.

Though this might be a decent project for experienced makers in the club, it may be beneficial for club leadership to avoid trying to teach members new skills by running this project as was the original goal of this design.

Club Merchandise: Stickers

Overview

In an effort to get a greater presence on campus, and to have more tangible items produced by the Makers Club, stickers were made to be handed out to club members and patrons.



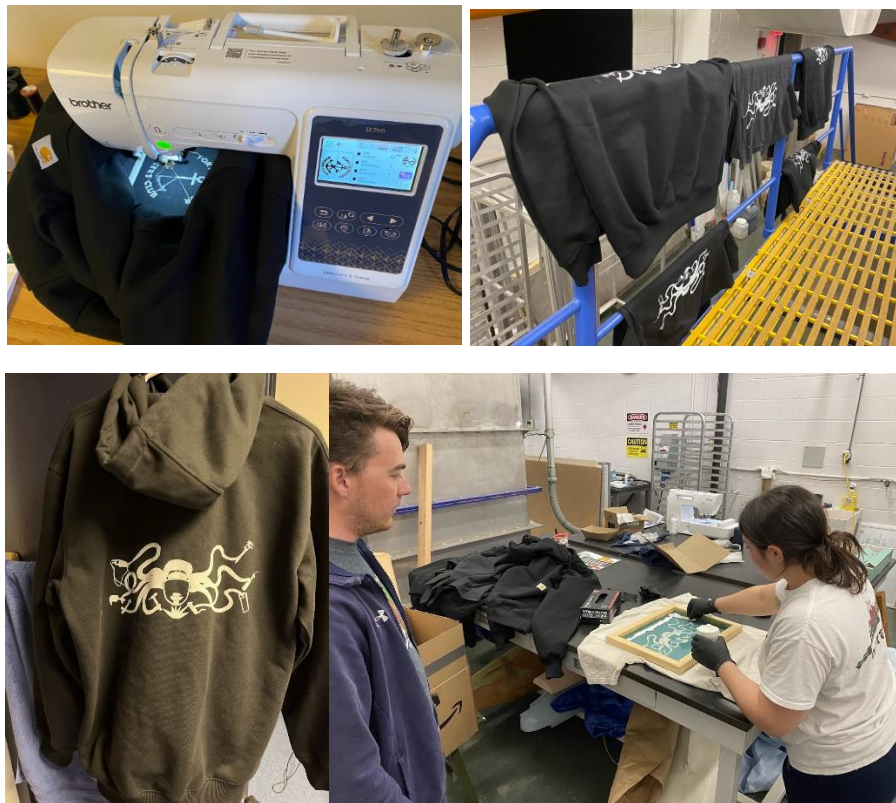
Takeaways

This project was a rather low cost way to generate club awareness and raise funds for the club. Through experience with several vendors, as of the Spring 2024 semester, <https://customstickers.com/> appeared to have the best prices and quality of stickers. That said, so many stickers were purchased, the need for another order wont become an issue for a rather long period of time.

Club Merchandise: T-Shirts and Hoodies

Overview

In an additional effort to generate club presence and explore potential fundraising opportunities, the club decided to purchase the tools and materials required to make club merchandise. This allowed for better branding options and customization for the club merchandise. Furthermore, this project justified purchasing more tools for students to use such as the sewing machine.



Takeaways

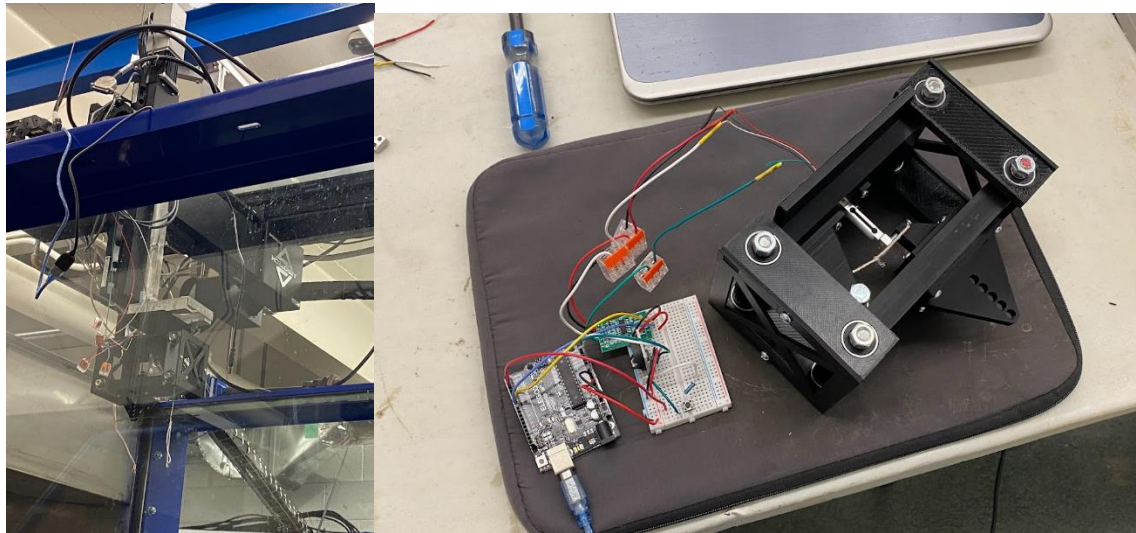
This project was a lot of effort to do. That said, once learned, screen printing was rather easy and quick to do. Using the embroidery machine was cumbersome, and was very time consuming.

Overall, this project was successful, fulfilling over 15 orders. The project turned only a marginal profit, however the goal of this project was a proof of concept and to create tangible products to raise awareness for the club.

Flow Channel Instrumentation Repair

Overview

The flow channel room in the back corner of the S&E has laid unused for years. Intended to be used as part of the curriculum for the Naval Architecture degree for model testing, the space has been largely unused by students and faculty for years. The goal of this project was to create a minimal viable product which would render the flow channel usable for students looking to further their learning. Although multiple systems for various types of testing and data collection, this project was focused on creating a load cell and test mount for hull resistance tests to be conducted. This test mount was to be built without significantly or irreparably changing the state the system was left in.



Takeaways

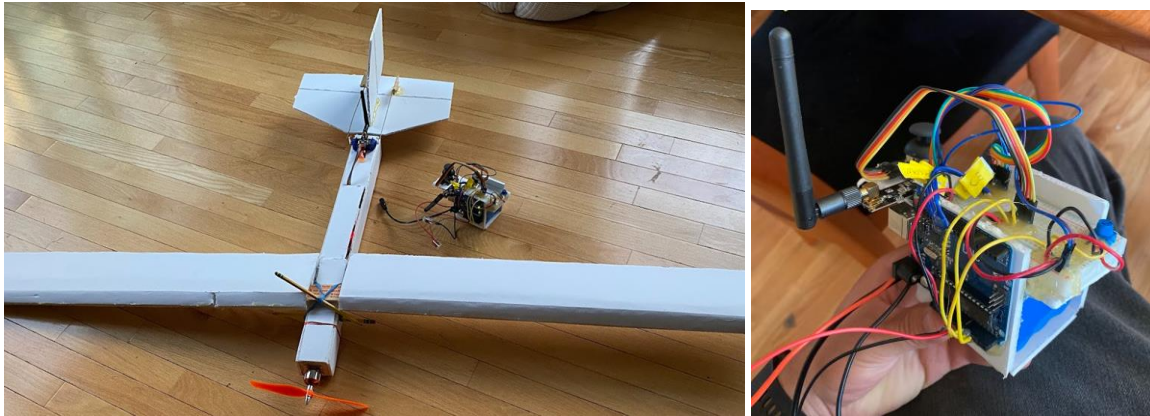
This project was largely done so the space could start to get utilized by the school again and help to enhance the learning experience at the college. Furthermore, this project was intended to give students more agency and open the door for students to work on and become invested in the lab equipment they should have access to on campus.

For work on this project, the president of the Makers Club was supposed to be getting paid for their work on the system for the benefits this work would have on the school's academic program. Unfortunately, the engineering department had to drop support for the project. This was doubly harmful to the effort since volunteer help was not expressly encouraged given the circumstances of only certain individuals getting reimbursed for their effort. This said, a set of underclassmen began to undertake volunteer work on the lab space as a result of this project. Although a test mount was created and verified to work well enough for experiments to be conducted, other students getting involved with refurbishing the flow channel had drained the tank and began an effort to recalc the tank. This meant that by the time of the project's completion, a full test could not be conducted before the end of the academic year.

Making an RC Plane with Arduino

Overview

Intended as a project to teach students about electronics and programming in a practical setting, this project was intended to be completed as a class. A trial prototype was made and tested.



Takeaways

Unfortunately, even though this project had a successful prototype, there were improvements that could have been made to make the build process easier and forgiving to mistakes. Additionally, at the time this was ready to be taught the class likely wouldn't have succeeded due to the time and commitment required to see such a project to the end.

If a similar project is of interest, try to find ways of simplifying the project and reduce cost. Make a trial version and ensure it is easy to complete for a beginner for this sort of project.

Adirondack Chairs

Overview

A project suggested by the Waterfront Director, Rob Crafa, through the clubs project suggestion list involved purchasing plans for and building a set of Adirondack Chairs for the waterfront. This was also expressed as an opportunity for the club to start a service project of making Adirondack chairs to be placed around the college campus.

Takeaways

This project seemed to be an excellent way for the club to get into the wood shop and make something of value for the college campus. Unfortunately, although the plans to build these chairs were purchased, by the time the club was ready to purchase the materials to build the chairs, the funding pledged by the waterfront to build the first set of chairs fell through.

The plans for this project are located at the waterfront. Likely in the wood shop.

Fabricating a Display Table for The Fort Schuyler Museum

Overview

The Maritime Industry Museum is a staple of the SUNY Maritime College campus, located in Fort Schuyler, the museum has antiques, ship models, and maritime memorabilia on display for the public to view. This museum, while a large part of the colleges identity, it has had trouble operating in recent years. Numerous exhibits are situated on folding tables or benches. To help the college and museum, the Makers Club has offered to construct tables and work on other projects for the museum.



Takeaways

Although a product was produced running this project, it was never completed and ultimately shelved for the time being. This was due to a failure of the museum administration to communicate with the club, and it appeared as though they were not particularly interested in collaborating or supporting this project. The finished table frame is located in the S&E, and should be finished and given to the museum to use. Hopefully in the future the museum staff will be more open to collaboration.



CNC Wooden Bowls

Overview

This project was introduced as a first project club members could do to learn about CNC Machining. The goal was to start with a piece of wood, measure the dimensions, and use those dimensions to create a CAD Model, G-Code, and ultimately a wooden bowl as a final product the creator could take home.



Takeaways

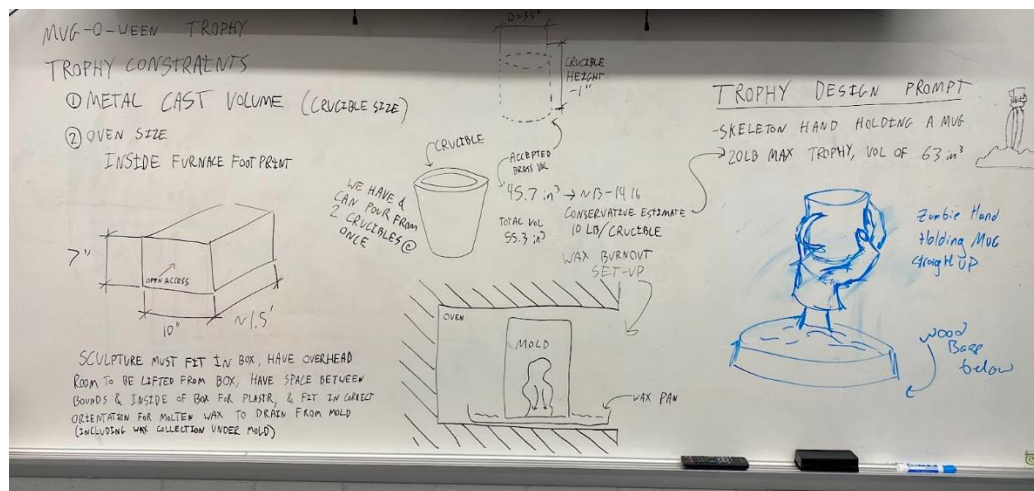
This project turned out to be extremely cumbersome. It was successfully used to teach students how to use the CNC machine, but all of whom were seniors at the college. This project had numerous roadblocks. In the beginning, the wood used was not dried properly, and would crack catastrophically after being cut. Furthermore, the process of making a CAD model, generating G-Code, and machining the bowl was time consuming. This was compounded by the fact that the machining process involved two cutting processes, with relocating and fixturing the piece in between. Though several people started this project, not many managed to complete it.

If making wooden bowls is something club members want to do in the future, be sure to source properly dried wood, and look into adapting the lathes at the machine shop to use with wood. Ultimately, the project had some success, but was not worth the effort.

MUG-O-Ween Trophy

Overview

A project introduced by Maritime Activities Program, MAP, the club was commissioned to construct a trophy for the colleges yearly Halloween celebration, MUG-O-Ween. The idea for the Makers Club was to sculpt a model, and attempt investment casting for this project using the induction furnace in the machine shop. Finishing work was to be completed with the casting mounted on a wood.



Takeaways

This project was never completed. Though steps have been taken in the design and build of this project, the materials required for the project arrived too late in the semester for it to be worked on during the academic year.

This project should be taken up and continued, however it is important to recognize that this manufacturing process is totally new to the Makers Club, and there are bound to be failures in attempting to complete this project.

Cutting Boards

Overview

Club members make cutting boards from quality wood scraps. This project was also a great opportunity to test the branding iron made for wood working projects.



Takeaways

This project was extremely successful. It does not require a lot of time or effort to come up with a great looking product. Make sure to use food safe wood, moisture resistant wood glue, and apply a wood safe finishing oil.

This project can be worked on by multiple individuals in the wood shop, would be great for teaching underclassmen how to use wood tools, and could be used as a lucrative fundraising option in the future if desired.

For anyone looking to replicate this project, the wood scraps used were bought off of Facebook Marketplace and shipped to the school for around \$40. This made roughly 10 cutting boards of the size pictured above.

Model Rocketry

Overview

This project was pitched as a joint effort between ASME and the Makers Club. The goal for this project was to break into hobby rocketry, and produce model rockets to launch.

Takeaways

This venture was meant to be a joint effort by the Makers Club and ASME, unfortunately, ASME was not active shortly after this project got pitched. Since the Makers Club was involved in numerous other ventures on campus, and the overall goals and pathways to accomplish them were nebulous from the start, this project was ultimately dropped.

This would be an interesting project to do, but before the project can be attempted, clear goals for the project need to be set, a plan to accomplish these goals, and importantly given the colleges location- the legality and laws surrounding how model rocketry is handled in the local area needs to be explored as well.

All of this being said, there is a single model rocketry kit in the S&E for those willing to build and launch it. Hopefully getting to use it will open doors or spark interest for club members to pursue this again.

Other Projects

These projects were entertained or would be good ideas to pursue in the future.

Club Art Stencils

These can be used to mark tools as Makers Club Property, which might become an issue as the tools the Makers Club owns grows.

ROV Repair

The waterfront has a ROV of sorts in their main bay, repairing this was something entertained in the past, but the club never had the time to do this.

Machinist Hammer

Making a machinist hammer would be a decent lathe project for club members looking to improve on their machining skills, or as a project that can be used for the Makers Club to introduce members to machining. It has some utility and is generally something students enjoy making.

Recommendations for the Makers Club Next Year

Do really quick and easy projects that people can take stuff home for and often

The more you get people using the tools at school, the better and the more it gets students familiar with using them/normalizes students using tools for their own projects. Getting club engagement and doing stuff every week is the most important thing for keeping the club going. For projects intended to teach new members or host low effort activities, stick to 3D Printing, Simple Wood Projects, Maybe extremely simple casting projects.

Keep communication up between the various college departments

The more people know about you, the easier it will be to coordinate with the various departments to get something done. Talk with the dean of engineering, Dean Winfrey, about progress with the club, where you want to go with it, and how she might be able to help you get there. Talk with John Celentani at Student Affairs about what you are doing, how you might be able to create safety and use policies that give students a lot of freedom, and protect from accidents and other mishaps occurring. Talk with Jason Vega about safety and the goals you have for the club, and how facilities might be able to help refurbish parts of the S&E for students to use (this was how one of the fume hoods and the lab furnace ultimately got repaired).

Get things in writing

There are so many things that have happened on campus prior to the Makers Club. Some of these things would have been easier for the Makers Club to do if it had been recorded. Having agreements and permissions in writing not only help keep their validity for other students to use, but ensures that these agreements are held true by other entities and departments at the college.

Keep using the spaces the club has access to

We managed access to the machine shop during the weekends, we also gained the capability and got permissions to use the machine shop. Verify that these permissions are still in affect, and make sure to use them. Similarly, use the wood shop, CNC room, flow channel room, electrical shop, and other school spaces!

With this, advocate for making spaces more usable. You'll find that the fact that the doors cannot be propped open in the S&E makes moving items extremely difficult and time consuming. There are no ways on paper for students to move items into the S&E aside from carrying them in, and there is no student parking around the S&E. There are numerous examples of how the spaces around the college can be improved for accessibility for project work on campus.

Prioritize buying tools over paying for group events

A large hinderance to students using machinery spaces on campus is just that we don't have tools. Not having basic tools has been a massive road block when trying to actually use equipment on campus. For reference, going to Makerspace NYC costed the club \$1800 dollars. For a few hundred more dollars, you can buy the induction forge used in the class and do the same thing at school.

When I was running the club, the only way I thought it would be economical to do an activity, is if the club leadership wanted to learn a new skill which they could then teach students to do and run projects on campus for.

Advice for buying tools

The whole reason for the Makers Clubs existence is to improve student access to tools. The best way to do this is to have tools which students can easily access for their needs.

Air Compressor and Air Tools

The CNC Machine requires air to change tools. The S&E has an air service line, which the CNC machine utilizes to do this, however, it leaks. Because of this, the air compressor is usually turned off during time when students would be using the CNC machine, and of course students do not have access to turn the compressor on when needed. This was a massive bottleneck for the project, to the point where we bought an air compressor for exactly this purpose. This air compressor is no longer at the school, but should be one of the first tools the Makers Club gets so that the CNC machine can be used reliably.

Basic Hand Tool Set

Often times during projects, there are significant delays because students do not have access to basic tools. Get screwdrivers, nut drivers, wrenches, ratchets and socket sets, hammers, mallets, chisels, pliers, punches, etc. Having these will reduce the number of times trips need to be made between the S&E and wood shop, or someone dorm room to fetch a tool that should be easily accessible, and drastically reduce the amount of time lost during projects. Other tools such as a cheap tap and die set can go a long way.

Electric Tools

These are more expensive, but having access to a cordless drill, or a band saw, jig saw, or other variety of this sort of equipment will vastly improve the workflow on various projects. Students also have access to these tools at the wood shop in the waterfront, but to have an easily accessible set of these tools in the S&E through the Makers Club would be a great quality of life improvement for students working on projects

Purchase Consumables

Having access to low-cost consumables will improve your workflow on projects drastically. Being stuck in a project because you need screws or glue gets extremely frustrating overtime. Buy hardware, Teflon and electrical tape, hot glue, gasket material, PLA rolls, and other

Expand manufacturing capabilities

Tools that give club members more freedom on their projects are great purchases. Resin 3D printing, Laser cutting, blacksmithing are all machining processes that students do not have access to, but purchasing tools as a portion of their

Buy Carts and other means of storage that is easy to move, and advocate for places to store tools in the S&E

The campus still does not have a place for the Makers Place to store tools. Because of this, club assets are found all over campus, and have to get moved often. Additionally, tools usually cant be used where they are stored, so being able to move tools when they are needed easily is incredibly important.

Tool Making

Where possible, make tools. Tools such as the branding iron, foam cutter, foundry, and others were all worthwhile endeavors and will have a lasting impact on the club for years to come. Projects done this way include making a branding iron, screen printing tools, hot wire foam cutter, and building the foundry. Some of these projects might include making a better foam cutter, creating stencils, and other similar projects.