



# Digital Studios Tool Orientation

## Rapid Prototyping Studio

### 3D Printer

## Table of Contents

<b>Orientation Summary</b>	<b>4</b>
Safety Considerations	4
Use Disclaimer	4
<b>CCA, Shops, and Digital Studios Rules and Policies</b>	<b>5</b>
CCA Student Code of Conduct	5
CCA Shops Safety Procedures, Community Standards, and Policies.	6
Digital Studios Orientation Policies	8
<b>3D Printer Rules and Policies</b>	<b>9</b>
3D Printer Use and Access Policies	9
3D Printer Checkout Policies and Procedures	10
Checkout Policies	10
Faculty and Staff Reservation Policies	11
Material policies	12
Approved	12
Filament	12
Prohibited Materials	13

# Orientation Summary

This orientation serves as training on the Ender 3-Pro Model 3D Printers at CCA. During this orientation you will learn the basics of what a 3d printer is, how it works, how to load material into the machine, level the bed, and set up a 3D CAD model to be 3D printed. Once completed, this orientation will certify you to use the Ender 3-Pro Model 3D Printers at CCA.

In this orientation guide, you will find information on CCA rules and policies and how they relate to 3D Printers. You will also find information relating to the basics of how 3D Printers are to be used, followed by the appropriate software and hardware setups and safe use.

## Safety Considerations

- **Fire Danger!** The 3D Printers use a heating element to “melt” filament plastic material to extrude your design. This machine is like a very fancy “hot glue gun”. If a sensor failure occurs, a “runaway heating” event may occur. While using the 3D Printer you **MUST**:
  - **Not leave the machine unattended**, especially on CCA property
  - Do not print with the machine “overnight”
  - If a fire/damage occurs, **put out the fire immediately** and **report the fire** to the shop’s staff
- Additional Safety considerations
  - **Hot Surface:** Both the extruder nozzle and print bed are capable of getting hot. The nozzle is capable of heating up to 250 C. Please use caution when working near these parts
  - **Pinch Point:** The 3D printers are capable of pinching fingers and hands, especially when performing service work. Use caution when your hands are within the tool envelope.

## Use Disclaimer

CCA shops and studios provide tools and staff to support your projects. However, unforeseen circumstances do occur which can disrupt the making process. Please note the following policies:

- Studio Staff is not responsible for project outcomes
- Use at your own risk: CCA and the RPStudio are not responsible for damaged/used materials
- Reservations prioritize access but do not guarantee machine use

# CCA, Shops, and Digital Studios Rules and Policies

## CCA Student Code of Conduct

### Violations of the Student Code of Conduct

CCA expects its students to uphold the college's values of artistic and academic excellence, compassion, integrity, and global citizenship. The following list, while not exhaustive, illustrates those behaviors that, when determined to have occurred in the judgment of the college, necessarily violate the values of the college; impinge upon the rights, safety, and well-being of its constituents; and therefore represent misconduct subject to disciplinary action:

- Attempted or actual theft of or **damage to college property** or property of college community members.
- Conduct that could result in the violation of any federal, state, or local law.
- **Conduct that threatens or endangers the health or safety of any member of the college community** including but not limited to physical abuse, verbal abuse, threats, verbal or nonverbal intimidation, bullying, stalking, or coercion.
- **Failure to comply with the directions of college officials**, law enforcement units, and emergency personnel acting in authorized performance of their duties. **This also includes failure to identify oneself to such persons when requested.**
- Failure of a student to act responsibly to assure that the student's guest is preserving the rights of the college community as outlined within the Student Code of Conduct.
- Forgery, alteration, or misuse of college documents, records, or identification.
- Hazing or conspiring to engage in similar acts that actually or potentially injure, endanger, or humiliate any fellow student or member of the college community, whether the hazing is consensual or not.
- **Interference with, obstruction of, or disruption of the teaching or learning process, administration, or any other college-sponsored activity.**
- **Knowingly furnishing false information to the college.**
- Possession, distribution, or use of any controlled substances on college property or at college-sponsored activities.
- Possession, distribution, or use of alcohol on college property or at college-sponsored activities, except under the conditions specified in the **Alcohol Policy**.
- Possession, distribution, or use of cigarette or vapor products on college property or at college-sponsored activities, except under the conditions specified in the **Smoking Policy**.
- Possession or use of a weapon or a replica thereof, such as a firearm, knife, explosives, or any other instrument used or potentially used to intimidate, threaten, and/or injure any member of the college community.
- Retaliation -- adverse action taken against a person because of the person's good faith opposing, reporting, or threatening to report a violation of the Code of Conduct or for participating in good faith in investigations, proceedings, hearings, or remediation related to college policies, including the Code of Conduct.
- Soliciting, assisting, or inciting another college community member to perform an act that violates the Student Code of Conduct or attempting to do the same.

- **Unauthorized entry or use of college property**, which includes unauthorized residence.
- Unauthorized possession, distribution, use, or duplication of keys or access cards for college property.
- Unauthorized use of electronic or other devices to record any person while on college property, disseminate personal information, or otherwise violate privacy without prior knowledge or consent.
- Unlawful harassment or discrimination based on race, color, religion, sex (including gender identity and pregnancy), national origin, age, disability, genetic information, sexual orientation, or parental status.

The CCA Student Code of Conduct can be read in its entirety at <https://portal.cca.edu/thriving/student-handbook/student-code-conduct/>

### CCA Shops Safety Procedures, Community Standards, and Policies.

Please note that repeated violations or any severe violation of the Shops Safety Procedures, Community Standards, and Policies may result in mandatory retraining, and interim suspension of shop access, and can be elevated to the Student Code of Conduct Process.

- **Shop users must follow the instructions of staff and student shop monitors.**
- **Shop users must have their CCA ID with them and show it to shop staff if requested.**
- Be respectful to all shop users and shop staff.
- **Training and approval are required to operate the equipment.**
  - This training may be provided by shop staff or by your instructors in classes.
- **Do not use the shops while impaired** by substance use, lack of sleep, stress, or other issues.

**Impairment due to lack of sleep, stress, or the use of any substance is a severe safety concern. Behaviors associated with this impairment jeopardize the health and safety of the community and will be referred to the Student Code of Conduct Process and may result in disciplinary action.**

- Ask for help or information whenever you need it.
- Wear clothing that is appropriate to the shop and process you are using.
- Wear appropriate personal protective gear for the shop and process you are using. This may include safety glasses, ear protection, and respiratory protection.
- **Headphones or earbuds may not be used in shops** where posted.
- Clean up after every process and reset or return your tools.
- Keep walkways clear and safe.
- No distracting other shop users.
- No running, yelling, or rowdy behavior.
- **Report machine or tool problems, or damage immediately to staff.**
- Report injuries and accidents immediately to staff.
- The shops are not responsible for the security of student projects or materials left in spaces.

- Guidelines on material use and disposal must be followed.

These shop-specific policies and standards are set in each studio by the Studio Manager.

**They cannot conflict with the rules above or the Student Code of Conduct.**

- Specific attire and PPE rules
- Storage of materials or projects in shops
- Food and drink guidelines
- Material use procedures
- Access times
- Cleanup procedures

**Please ask the studio manager if you are not clear on any of the policies or procedures in the shop you are working in. We want the shops to be safe, efficient, and easy to work in for all of the community.**

## Digital Studios Orientation Policies

The CCA Shops including the Digital Studios and the RPStudio **require all users to attend an orientation** to learn how to safely operate our shop equipment **before use**. To facilitate access to our tools, the Digital Studios run numerous orientation trainings throughout the semester. A full orientation schedule of the RPStudio can be viewed here: <https://portal.cca.edu/learning/shops/rps/>

- When attending an orientation:
  - **Be on time.** Attendees arriving more than 10 minutes late after the scheduled start time will have missed essential safety information will be asked to leave and will not be “certified” for tool use.
  - **Participate and pay attention.** These orientations are for your safety in addition to increasing your knowledge. You are encouraged to ask questions while attending the orientation. Do not engage in disruptive behavior while attending the orientation.
  - **Sign in and fill out the attendance sheet.** Without this information, we will not have a record of your attendance for the orientation. Tool certification will not be granted to anyone who has not signed in on the attendance sheet.
- “Open” orientations are:
  - Available to any “active” CCA user including enrolled students, active staff, and active faculty.
  - Scheduled approximately once (1) a week until the final four (4) weeks of the semester.
  - **NOT scheduled during the final (4) weeks of the semester to accommodate student use during finals.**
- “Class” orientations may be requested to train entire class groups on Digital Studios Tools. Class orientations:
  - Must be requested by the **faculty** member teaching the course.
  - Must be scheduled with the appropriate Digital Studio Manager via email with at least 1 week's notice to schedule “ahead” of student reservations.
  - Must provide a class syllabus to the appropriate Digital Studios manager at least 1 week in advance of the orientation.
  - Will be scheduled in the order they are requested.
  - **Must be attended by the requesting faculty member.**
- Only CCA Digital Studios management staff can train you on Digital Studios Tools.
  - Other students or faculty cannot certify other users on Digital Studios machines.
  - Only certifications performed by Digital Studio Managers will be honored.

# 3D Printer Rules and Policies

## Use Disclaimer:

- Studio Staff is **not** responsible for project outcomes
- Use at your own risk: CCA and the RPStudio are not responsible for damaged/used materials

## 3D Printer Use and Access Policies

The Following Rules apply to ALL users at CCA. Violation of these rules and policies may result in immediate suspension of access to the 3D Printers and RPStudio. Reinstatement of access will be at the discretion of a Digital Studios Manager.

- **All users must be current CCA students or active staff or faculty members.**
  - CCA alumni or other outside users are NOT allowed to use ANY of the shops' equipment at CCA including the RPStudio.
- All users must attend a 3D Printer Orientation before using any of the 3D Printers.
- Users may not leave a machine that is running unattended, especially while on CCA property
  - **If your 3D Printer is found running unattended overnight, it will be shut down and returned to the Rapid Prototyping Studio. Digital Studio Staff will immediately suspend your access to the laser cutters and RPStudio.**
- Users may check/use only one (1) 3D Printer machine at a time.
  - Multiple machines cannot be used by the same person at the same time in a safe manner.
  - Simultaneous reservations for the same user will not be honored.
- Only approved 3D Printing Filament may be used on our 3D Printers.
  - Safe 3D Printing Filament are covered in detail in the material policies section of this orientation guide.
  - **Use at your own risk: CCA and the RPStudio are not responsible for damaged/used materials**
    - CCA and the Rapid Prototyping Studio are not responsible for damaged materials. It is the responsibility of the tool user to perform “test cuts” and input proper machine/material settings.
    - Users will not be reimbursed for any damaged or incorrectly manufactured materials/items.
- Do not use any “Prohibited Materials” in the 3D Printers.
  - “Prohibited Materials” cause clogs, require printing temperatures that may damage our machines, or may “off-gas” odorous, poisonous, carcinogenic materials.
  - “Unknown” or “mystery” are prohibited materials and cannot be used under any circumstances.
  - **Use of “Prohibited Materials” will result in immediate suspension of access to the 3D Printers and RPStudio.**
- If a fire occurs, **put out the fire immediately** and then report the fire to the shop's staff.
  - Unreported damages to the tools result in increased and significant damage to



our machines. Early reporting usually means we can quickly fix the machines.

- **Failure to report fires or machine damage will result in a “tool abuse/repair fine” for the value of the parts damaged in addition to suspension of access to the 3D Printers and RPStudio.**

- **Users must Follow all staff instructions.**

## 3D Printer Checkout Policies and Procedures

All Users are required to “check out” the 3D Printers from the Rapid Prototyping studio.

### Checkout Policies

- **Checkouts must be made in person in the Rapid Prototyping Studio.**
  - Checkouts are 2 weeks long.
  - A 24-hour “turnover” period is required for a new checkout.
- Users may use only one (1) 3D Printer at a time.
  - Multiple machines cannot be used by the same person.
  - Simultaneous checkouts for the same user will not be honored.
- **Machine checkouts are non-transferable.** Do not share your 3D Printer with anyone including friends or studio classmates. If a machine is checked out to you, you must be the one using the equipment.
- **Checkouts** include (1) Ender 3-Pro 3D Printer and (1) tool kit with the following stipulations:
  - Users are provided (1) roll of 1.75mm PLA material with their **first** checkout of the year. Users must provide their material after the first checkout.
  - Checkouts are available for pickup from the “Rapid Prototyping Studio” (commonly called the “Laser Room”)
  - Equipment must be “checked out” to the user from Digital Studios Staff, do not take equipment from the room without staff approval.
- All machine **Returns** must take place at the “Rapid Prototyping Studio” (commonly called the “Laser Room”)
  - Your 3D printer is due back by 2:00 pm on your specified return date.
  - Users must clean/clear the 3D Printing bed and work areas when done with the machine.
  - Please **leave the Micro SD card in/inserted in your machine.**
  - You must return your **complete hand tool kits** which include: (1) side clipper, (1) pallet knife/scrapper, (1) USB dongle, a vial of needles, a bag of alan tools, and spare parts
  - Users must “**unload**” **material** from their machine when returning it.
  - Please return any unused 3d printing filament.
  - Users who fail to return their machine (or associated complete tool kits) on time will face late fees of **\$20/day** (up to \$250 total)

## Faculty and Staff Reservation Policies

To accommodate classes that teach/use 3D printing as a part of the curriculum and CCA projects, CCA faculty and staff have additional privileges for reserving time on the 3D Printers. Faculty and Staff are encouraged to reduce their use of the equipment during peak student use times such as finals. Normal user reservation policies apply to faculty and staff in addition to the following policies.

- Faculty and Staff may reserve a group of machines **in advance at** any time during the **current** academic semester.
- Faculty and Staff reservation requests will be processed on a “first come, first serve” basis.
- Faculty and Staff may request up to **two (2) non-consecutive 2-week** reservation sessions **per semester**.
- Faculty and Staff should send group reservations requests to [shops@cca.edu](mailto:shops@cca.edu)
- Faculty and Staff may not make reservations for a group/class of 3D printers during the final 4 weeks of the semester. **3D Printers will only be available for checkout on an individual basis during the final 4 weeks of the semester.**
- Faculty and Staff may make reservations for specific classes or finite user groups of up to 18 machines at a time (example: 16 students, 1 faculty/staff member, 1 TA).
- All user reservations including Faculty and Staff checkouts are non-transferable.
  - Faculty may make a group reservation for their students however, **individual users (students) MUST be present in person to pick up their machine.** A single user or faculty member cannot pick up all of the machines for a group/class.

## Material policies

The 3D Printers use a heated extruder to “melt” plastic filament. This melted filament is then pushed out, or extruded. Different types of filaments require different temperature settings and “feed rates. Please only use “approved” filaments in our 3D printers. Please keep in mind that each 3D-printed

- **Use at your own risk: CCA and the RPStudio are not responsible for damaged/used materials**
  - CCA and the Rapid Prototyping Studio are not responsible for damaged materials. It is the responsibility of the tool user to perform “test cuts” and input proper machine/material settings.
  - Users will not be reimbursed for any damaged or incorrectly manufactured materials/items.

<u>Approved Filament</u>	<u>Recommended Extruder Temp</u>	<u>Recommended Bed Temp</u>	<u>Material Notes</u>
PLA - Polylactic Acid	200 C	60-70 C	

## Prohibited Materials

These materials are extremely flammable, poisonous, carcinogenic, and usually a combination of the 3. They are not to be used in the laser cutters under any circumstances. **Use of prohibited materials will result in immediate suspension of access to the laser cutters and RPStudio.** If you have a material that you are unsure about, find an SDS (safety data sheet) from the manufacturer of your material and a Digital Studio Manager will review it.

- Do not use any “Prohibited Materials” in the 3D Printers.
  - “Prohibited Materials” cause clogs, require printing temperatures that may damage our machines, or may “off-gas” odorous, poisonous, carcinogenic materials.
  - “Unknown” or “mystery” are prohibited materials and cannot be used under any circumstances.
  - **Use of “Prohibited Materials” will result in immediate suspension of access to the 3D Printers and RPStudio.**