

Massachusetts College of Art & Design Animation Department Gear Recommendations

v7/6/2020

Please note:

These are recommendations not requirements.

These are sound recommendations, but you should still do your own research. If you have any questions contact Adam.

Specifications may change without notice.

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MASSART

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Important Tips:

1. Write your name / phone number on all your equipment in case it is lost/stolen it can be returned to you.
2. Never leave any of your equipment unattended anytime.
3. Be mindful of your surroundings
 - a. Don't place equipment or laptops on the edge of tables.
 - b. Absolutely have no food or drink near laptops, desktops, or any equipment.
 - c. NO food or drink in ANY of the Animation studios!
 - d. Never leave your computers or equipment unattended.
4. Before you leave an area check and see if you left anything behind. (phone chargers, thumb drives, etc. It is usually the small things.)
5. Have a data backup plan and follow it.

Recommended plan:

You have two (or more) external hard drives. One that stays at home all the time and is not moved that you back everything up to.

One smaller portable external drive that you travel with. This is the hard drive that you will put your daily work on, when you return home you should copy the files from this drive to your home drive.

Back everything up to a cloud service as well, google drive, dropbox, etc. Through MassArt you have unlimited storage space on Google drive.

6. Do NOT unplug your hard drive from your computer until you eject it. If you don't eject it, it can possibly corrupt data on your drive. If the drive will not eject, turn off the computer fully. Then unplug the drive.

SECTION 1 - Strongly recommended essential equipment

Write your full name and phone number on your gear in case you accidentally lose it.

1. Minimum 2 Hard drives
2. Plastic Peg bar
3. Headphones

1A. External Hard drives

There are a lot of different types of harddrives out there, researching is important. If you have any questions Peggy and I are happy to help. Speak with us before you purchase.

There are two kinds of hard drives in the world:

“Those that are dead and those that are about to die.”

This is why you need to take care with what external hard drives you buy and how you take care of them. Redundancy is extremely important. Back-up your data in multiple locations both physical and cloud-based.

You should have two hard drives:

1. One you keep at home, never move and backup all your data on everyday.
2. One you travel with in a padded case.

Get a hard drive that has a spindle speed of 7200rpm only! Or buy a SSD Solid State Drive.

This will enable real-time playback of your video files. If you purchase a SSD solid state drive that is even better as it has no moving parts and is way faster, but it is more expensive.

DO NOT BUY 5400RPM DRIVES!

7200rpm refers to how fast the disc rotates in the hard drive, the faster the rotation the faster your data access times are. 7200rpm is a minimum for moving image work.

Solid state has no moving parts and much faster access times, but they are more expensive for less capacity. They are the best for speed.

USB-C (Thunderbolt 3), Thunderbolt, and or USB 3.0 connection is best. You may need adapters for USB-C to connect them to our computers here.

BEFORE you buy your hard drives check and see what connections are available on your computer. You may need to buy adapters.

Having multiple connection ports on a drive is a good idea. In case one port breaks you have a spare port to get your data off.

Hard drive health tips :

1. When you buy a new hard drive, format it for your operating system. (See Below)
2. Always eject your hard drive before unplugging from the computer otherwise you run the risk of corrupting your data.
3. Do not drop the hard drive!
4. Stay away from Lacie drives! I recommend Other World Computing, Seagate, Western Digital (check online reviews)
5. A note about thumb drives: They are useful, but HIGHLY unstable, they are great to transport files that you have another copy of somewhere. Don't use them as permanent storage and always back them up constantly because... **THEY WILL RANDOMLY DIE!**

Choose the size you can afford. The more space the better. (4 TB is a good place to start.)

Good home drives:

<https://eshop.macsales.com/shop/thunderbay-4-mini/thunderbolt-3>

These drives are more complicated to set-up.

Other World Computing has multiple good RAID solutions:

<https://eshop.macsales.com/>

Good portable drives:

These drives are relatively inexpensive, you could potentially get multiple drives to have multiple backups.

https://www.amazon.com/gp/product/B078T9SZ3K/ref=ppx_yo_dt_b_asin_title_o08_s02?ie=UTF8&psc=1

https://www.amazon.com/gp/product/B07VX8HHFK/ref=ppx_yo_dt_b_asin_title_o03_s04?ie=UTF8&psc=1

I also recommend getting a padded case for the hard drives you travel with. Amazon.com has some cheap but good hard drive cases I recommend for protection. Check specs of your drive to make sure they will fit.

https://smile.amazon.com/AmazonBasics-External-Hard-Drive-Case/dp/B00F5CKWBA/ref=sr_1_2_sspa?s=pc&ie=UTF8&qid=1530543866&sr=1-2-spons&keywords=hard+drive+case&psc=1

Formatting your hard drive.

IMPORTANT! - When you buy a new hard drive, format it for your operating system.

WARNING!!! - Formatting your hard drive will ERASE ALL your data!

For exclusive use on a MAC use disk utility app and format for "MAC OS EXTENDED (JOURNALED)"

For use on a WINDOWS PC and a MAC, format for "ExFAT". (Use this ONLY if you are a PC user.)

If you need assistance contact Adam or Peggy.

RAID QuickGuides
 RAID Concepts 101
 Host Controller Types
 Advanced Features

Definitions: Show Hide

RAID 0 (Stripe)
 Data is split into blocks over two or more drives at same time for high speed and large capacity.

Capacity Data Safety Performance

Learn About RAID 0

RAID 1 (Mirror)
 Data is written at same time to two drives only for highest level of data safety and redundancy.

Capacity Data Safety Performance

Learn About RAID 1

RAID 10 (1+0)
 Data is Striped (RAID 0) over two Mirrored sets (RAID 1) of drives for fast redundancy.

Capacity Data Safety Performance

Learn About RAID 10

RAID 5 (Stripe with Parity)
 Data is Striped (RAID 0) while incorporating parity over three or more drives for the best combination of speed, capacity, and redundancy.

Capacity Data Safety Performance

Learn About RAID 5

JBOD
 (Just a Bunch Of Disks/Drives)
 Each disk shows up as an individual logical volume on the computer. A 4 bay unit populated with drives will have 4 logical drives show up on the computer.

Capacity Data Safety Performance

Learn About JBOD

Span (N-RAID)
 Combines capacity of two or more drives of varying size without any RAID data distribution scheme into one logical desktop volume.

Capacity Data Safety Performance

Learn About Span/N-RAID

*A note on RAID

RAID refers to how data is stored on multiple drives which are formatted in a special way. There are different RAID formats which offer a varying balance between the speed of data accessibility and the safety of data:

If you buy a RAID array, you want to choose a RAID format that balances safety of your data and performance.

More on RAID:

https://eshop.macsales.com/shop/hard-drives/sata/RAID_Guide/RAID_Concepts

1B. Headphones

Get something better than earbuds. DO NOT use earbuds to mix your film soundtracks!
Here are some good headphones with a range of prices...the more expensive the better the headphones, but all work well.

Audio-Technica ATH-M20x Monitor Headphones (Black) \$49

https://www.bhphotovideo.com/c/product/1024219-REG/audio_technica_ath_m20x_closed_back_professional_studio.html

Audio-Technica ATH-M30x Monitor Headphones (Black) \$69

https://www.bhphotovideo.com/c/product/1024220-REG/audio_technica_ath_m30x_closed_back_professional_studio.html

Audio-Technica ATH-M40x Monitor Headphones (Black) \$99

https://www.bhphotovideo.com/c/product/1024221-REG/audio_technica_ath_m40x_closed_back_professional_studio.html

Audio-Technica ATH-M50x Monitor Headphones (Black) \$149

https://www.bhphotovideo.com/c/product/1024222-REG/audio_technica_ath_m50x_closed_back_professional_studio.html

1C. Peg bars

Peg bars - \$3.99

Plastic cheap peg bar – make sure it has ACME pegs! Our animation punches at school are ACME punches. They are \$4.99 and are also sold at the Museum School Store, get a bunch, you never know when you need them.

Write your name on them!

<http://www.lightfootltd.com/content/acme-pegbar-plastic>

These are the round pegs pegbars if you are animating at home, you can punch your paper with a regular 3-hole punch.

<https://www.lightfootltd.com/content/round-pegbar-plastic>

SECTION 2 - Recommended but not Required

2A. Computer

All of the computers in our department are various iMacs or MacMinis.

General guidelines to follow for any computer:

1. **Do NOT buy i5 processor!** It is not designed for moving image/graphics work.
2. *i7 or i9 processor is best.*
3. *512GB SSD harddrive or larger is better. 1 TB would be an ideal minimum, more if you can afford it.*
4. *SSD Solid State Drive*
5. **Minimum 16GB of RAM** the more the better.
6. *Buy the best graphics card with the most onboard RAM you can afford.*
7. *If the computer has an internal hard drive that is not a SSD make sure the spindle speed is 7200rpm NOT 5400rpm.*
8. **DO NOT BUY FUSION DRIVES!** We have had over 10+ fail in the department.
9. *If you are purchasing any Mac I highly recommend purchasing Applecare on any Apple device you have..*

Navigating all of the specs on different computers can be confusing and intense. If you have any questions before you buy don't hesitate to email me at adam.savje@massart.edu .

The next page has some good examples of laptop specs As of 7/6/2020, prices are NOT with the educational discounts. ALWAYS get Applecare. These computers have multiple USB-C connections, you will need to purchase a separate multi-adapter for HDMI, USB3, Ethernet connections. Remember you can always get an adapter to plug your laptop into a TV for a second larger monitor.

Good System:



13-inch MacBook Pro - Space Gray

1

\$2,839.00

Pay 0% APR for 12 months:

\$236.58/mo.

[Hide product details ^](#)

[Remove](#)

Hardware

- 2.3GHz quad-core 10th-generation Intel Core i7 processor, Turbo Boost up to 4.1GHz
- 13-inch Retina display with True Tone
- Touch Bar and Touch ID
- Intel Iris Plus Graphics
- 32GB 3733MHz LPDDR4X memory
- 2TB SSD storage
- Four Thunderbolt 3 ports
- Backlit Magic Keyboard - US English
- Accessory Kit

Software

- Photos, iMovie, GarageBand
- Pages, Numbers, Keynote
- macOS

Great System:



16-inch MacBook Pro - Space Gray

1

\$4,999.00

Pay 0% APR for 12 months:

\$416.58/mo.

[Hide product details ^](#)

[Remove](#)

Hardware

- 2.4GHz 8-core 9th-generation Intel Core i9 processor, Turbo Boost up to 5.0GHz
- 64GB 2666MHz DDR4 memory
- AMD Radeon Pro 5600M with 8GB of HBM2 memory
- 4TB SSD storage
- 16-inch Retina display with True Tone
- Four Thunderbolt 3 ports
- Touch Bar and Touch ID
- Backlit Magic Keyboard - US English
- Accessory Kit

Software

- Photos, iMovie, GarageBand
- Pages, Numbers, Keynote
- macOS

2B. Software

The main software packages we use in the Animation department are:

1. Dragonframe
2. Adobe Animate
3. Adobe After Effects
4. Adobe Premiere
5. Adobe Photoshop
6. Adobe Illustrator
7. Adobe Media Encoder
8. Toon Boom
9. Autodesk Maya
10. AVID ProTools
11. zBrush
12. Storyboarder

Do not bootleg software! We will NOT support it!

If you want to purchase this software for your own laptops see the following links below:

DRAGONFRAME

DZED Systems - Dragonframe

It is absolutely the best and most professional stop-motion animation software out there.

Stop Motion software that we use for all image capture:

<http://www.dragonframe.com/>

Dragonframe connects to a digital SLR camera that has "Live View" capability via a USB cable.

Go here to see how Dragonframe will work with your particular camera:

<https://www.dragonframe.com/camera-support/>

They do have student discounts:

<http://www.dragonframe.com/student-store/>

ADOBE software is FREE for MassArt students.

See the following from MassArt IT:

Adobe Creative Cloud access will continue!

Adobe has officially extended free access to Adobe Creative Cloud for students until August 15th, 2020. Faculty and staff will continue to have access as well.

I am also pleased to announce that MassArt will have a campus-wide site license to provide students, faculty and staff with access to all Adobe Creative Cloud applications beyond August 15th.

We are currently working with our partners (Adobe, SHI, and NERCOMP) to finalize options and formalize the agreement before the August 15th deadline.

To learn more Adobe CC at MassArt, check out our [Adobe Creative Cloud article in the Technology Knowledge Base \(TKB\)](#) and the [Provisioning of free Adobe Creative Cloud Licenses for Students, Faculty and Instructors until August 15th, 2020](#) articles in the Wiki for more details on Adobe Creative Cloud at MassArt.

LinkedIn Learning (formerly Lynda.com) access will continue

We will continue to license LinkedIn Learning (LiL) content and make it available to all students, faculty and staff - this is a great resource for developing technical skills, but there is additional content to help with professional and career development.

To learn more about LiL, check out our [LinkedIn Learning article in the Technology Knowledge Base \(TKB\)](#).

Zoom access will continue

Zoom will continue to be available. To learn more about Zoom, check out our [Zoom article in the Technology Knowledge Base \(TKB\)](#).

MASSART PURCHASING DEALS:

Deals on software.

GO to this link to PURCHASE

<https://wiki.massart.edu/display/TechResources/Purchasing+Deals>

SOFTWARE INFORMATION

Adobe Information:

<http://www.adobe.com/>

ToonBoom Information

<https://www.toonboom.com>

Autodesk MAYA Information:

<http://www.autodesk.com/products/maya/overview>

Students can use MAYA free for 3 years:

<https://www.autodesk.com/education/free-software/maya>

AVID ProTools

Information:

<http://www.avid.com/pro-tools>

AVID ProTools Purchasing (Click on Education tab.):

<http://www.avid.com/pro-tools/how-to-buy#show-1>

SECTION 3 - Our Basic Animation Setup

Less Expensive but decent camera:

Canon EOS T7i w/18-55mm Lense

https://www.bhphotovideo.com/c/product/1318769-REG/canon_1894c002_eos_rebel_t7i_dslr.html

58mm Polarizing & UV Protector filter for 18-55mm Lense

https://www.bhphotovideo.com/c/product/72725-REG/Tiffen_58PTP_58mm_Photo_Twin_Pack.html

60mm Macro Lense

https://www.bhphotovideo.com/c/product/371176-USA/Canon_0284B002_EF_S_60mm_f_2_8_Macro.html

52mm Polarizing & UV Protector filter for 60mm Lense

https://www.bhphotovideo.com/c/product/72723-REG/Tiffen_52PTP_52mm_Photo_Twin_Pack.html

Excellent but expensive camera: (Get this camera if you can afford it.)

Canon EOS 5D Mark IV DSLR Camera with 24-105mm f/4L II Lens

https://www.bhphotovideo.com/c/product/1274706-REG/canon_eos_5d_mark_iv.html

Tiffen 77mm UV Protector and Circular Polarizing Filters Twin Pack

https://www.bhphotovideo.com/c/product/1003987-REG/tiffen_77mm_photo_twin_pack.html

Canon AC-E6N AC Adapter and DC Coupler DR-E6 Kit

https://www.bhphotovideo.com/c/product/1278814-REG/canon_ac_e6n_ac_adapter_and.html

Camera Accessories

16Gb Memory Card (Get a larger capacity card if you are shooting video.)

https://www.bhphotovideo.com/c/product/1182600-REG/sandisk_sdsdxne_016g_gnci2_extreme_16gb_sdhc_u3.html

MOVO Top Handle & Hot Shoe

https://www.amazon.com/gp/product/B00YQD94RW/ref=oh_aui_detailpage_o05_s00?ie=UTF8&psc=1

Extension cable for connecting Dragonframe

USB 3.0 Male to Female Extension Cable - Qty.2

https://www.amazon.com/gp/product/B008219UMI/ref=oh_aui_detailpage_o00_s00?ie=UTF8&psc=1

Lighting

Lowel ProLight - Qty.2

https://www.bhphotovideo.com/c/product/285941-REG/Lowel_P2_101_Pro_Light_Focus_Flood_Light.html

Gelframe - Qty.2

https://www.bhphotovideo.com/c/product/158996-REG/Lowell_IP_40_Pro_i_light_Gel_Frame.html

4 Leaf Barndoor - Qty.2

https://www.bhphotovideo.com/c/product/31758-REG/Lowell_IP_20_Complete_Four_Leaf_Barndoor.html

FSH Lamp for Lowell ProLight - Qty.4 (2 for lights, 2 spares)

https://www.bhphotovideo.com/c/product/610321-REG/Impact_FSH_FSH_Lamp_125W_120V.html

Polarizing Sheet (Cut into 2 squares for ProLights)

https://www.bhphotovideo.com/c/product/45130-REG/Rosco_101073001720_Polarizing_7300_Filter.html

Bi-Color LED Video Light Stand Lighting Kit 3 Pack 15.4" Large Panel 3000K-5800K 45W 4800LM Dimmable 1-100% Brightness Soft Light (This is a decent cheap LED panel kit)

https://smile.amazon.com/gp/product/B07K8G8CCR/ref=ppx_yo_dt_b_asin_title_o01_s00?ie=UTF8&psc=1

20" C-Stand - Qty.2

https://www.bhphotovideo.com/c/product/243912-REG/Avenger_A2018FCB_A2018FCB_Century_C_Stand.html?sts=pi&pim=Y

Grip Head for C-Stand - Qty.2

https://www.bhphotovideo.com/c/product/3582-REG/Avenger_D200B_Black_Grip_Head.html

20" C-Stand Arm - Qty.2

https://www.bhphotovideo.com/c/product/67890-REG/Avenger_D500LB_Extension_Arm_20.html

Beseler Copy Stand

https://www.bhphotovideo.com/c/product/197255-REG/Beseler_4211_02_CS_Digital_Photo_Video_Copy_Stand.html

Portatrace Light Panel 8.5" x 11"

https://www.bhphotovideo.com/c/product/826078-REG/Porta_Trace_Gagne_811LP_BLK_LED_Light_Panel_Black.html

DRAGONFRAME Software

<http://www.dragonframe.com/student-store/>

Tablets

Wacom Cintiq 16 (This is what we have in our labs)

https://www.bhphotovideo.com/c/product/1449265-REG/wacom_dtk1660k0a_cintiq_16_creative_pen.html

Wacom Intuos Pro - Medium

https://www.bhphotovideo.com/c/product/1298743-REG/wacom_pt660_intuos_pro_creative_pen.html/overview

Wacom Intuos - Small (w/bluetooth)

https://www.bhphotovideo.com/c/product/1386907-REG/wacom_ct4100wlk0_intuos_creative_pen_tablet.html

I recommend purchasing a bag or carrying case for your tablet.