

SWP Spring 2021 Spend Down Equipment Applications

Total applications	\$	622,279.95
Total less large Fire request	\$	354,576.53
Total of all #1 requests	\$	188,705.13
Amount available	\$	146,378.00
Shortage, available vs. #1's		(\$42,327.13)

Highlighted = Funded

Blue = Approved, waiting to see if more funding comes available before end of grant term

Grey fill = Will advise program to submit full project application for SWP funding in Fall 2021

Department	Item	Cost	Rank	Need	Justification
Aero	Autel Evo I drone bundles, Autel Evo II drone bundles, Autel Evo safety guards, Evo batteries	\$9,625.12	1	The National Institute of Standards and Technology (NIST) has introduced a series of assessments, effectively creating a “drivers test” for unmanned pilots. We have adopted the NIST Standard: It has put pressure on our equipment and proves need for new platforms. Expanding our EVO I and EVO II aircraft inventory will offer more simultaneous flight times as well as back-to-back flights with fewer breaks to recharge batteries. The Autel EVO is a reliable, versatile platform for both beginning and advanced remote pilot student use, and has a dual role for nighttime operations. Our current beginning and advanced courses are operationally limited by available platform equipment, and purchase of these aircraft and batteries will	Unmanned Aeronautics as an industry is undergoing intense growth and so too is the unmanned program at Mt. SAC. New regulations from the FAA as recently as January 2021 have created brand new use cases which we must pivot to support including nighttime, beyond visual line of sight (BVLOS), and operations over people (OOP.) New standards for pilot training have emerged from the National Institute of Standards and Technology (NIST.) In response to this rapid growth, we have defined four new courses in addition to current course offerings. The UAS degree and certificate programs and new coursework need intense focus, and will depend upon additional technology resources to support this growth including hardware and software. This industry is moving very quickly, and we

				immediately boost availability for student flight operations.	will need to stay current with technology and practices.
Electronics	Vector Network Analyzers	\$59,484.78	1	This equipment will enable students to measure electrical properties of components and systems operating within the microwave region of the radio spectrum, examples of which include Wi-Fi networks and smartphones, automotive driver assistance features, and specialized systems within satellite, public safety, and defense-related communications sectors. With this purchase the Electronics department will be able to refocus the emphasis of one of its core (required) communications courses on the laboratory measurements technicians and technologists make using industry-standard equipment in the many research and development laboratory or production environments found within Los Angeles County. These devices are distinct and separate units from the devices requested from other funding sources.	The expense of equipping laboratories for microwave-frequency-range measurements has historically meant that such facilities were found only in research universities, but market forces and technical advances now make professional-level equipment available for community college students in Career Education settings. LA county employers need technicians well-versed in microwave technologies. Mt. SAC has one of the few electronics programs in the area with a required communications course that emphasizes the specific skills encountered in the microwave context, thus introducing a "captive audience" to an industry sector students might not otherwise consider. With this equipment purchase, the course focus can be expanded to emphasize the laboratory measurements most valued by employers, thus making students proficient upon hire, rather than after extended on-the-job training. Such an investment now will make Mt. SAC visibly responsive to employer needs in this expanding sector.
Tech Theater	Creative Connors Pushstick Machine or Kit	\$22,053.30 or \$29,192.70	1	Professional Regional Theaters and Themed Entertainment Venues hardly do a single production without automation. Our TTAC's biggest recommendation during this years meeting was to teach students how to "program something to move." Our TT Program has taken the first steps towards incorporating automation into our shows, purchasing all of the brains to automate scenic pieces, but without	By incorporating this machinery into our program, both classroom learning and productions, our students will be prepared to use automated scenery in the professional / post educational world. The "Pushstick" is a machine that can automate moving scenery on the (X, Y) axis of the stage. It involves learning how to program that technology, set it up, and ensure it is safely operating, all of which are individual jobs and skills that

				<p>this machine, the brains don't have anything to control. We can rent this until we can afford it (\$300/week), but purchasing it would allow us to train with it not only on shows (THTR 13), but also in our classroom (THTR 14, 21, 22, 27). The kit is requested if this is granted WITH our second priority ask, as we only have brains to control one piece at a time, and the kit allows for a second automation.</p>	<p>get people hired in the industry. Having this kind of technology is also a huge draw to a program like ours, which is new and quickly growing. If students know they will be training on the relevant (21st Century) equipment they are more likely to come to our program, as opposed to Cypress or Fullerton College, who have already implemented automated scenery into their productions.</p>
Welding	3 plasma cutting machines & 3 welding power supplies	\$31,838	1	<p>All of these machines are needed to replace worn, broken, and unrepairable machines we currently have in the welding shop. The purchase of these machines will bring our department up to full strength as regards plasma cutters, and a specific set of 6 Miller power supplies that are utilized in our outdoor patio area, of which currently 3 of the 6 are operable. The Plasma cutters are used in all of our fabrication classes (WELD 30, WELD 80, WELD 90A, and WELD 91), while the Miller power supplies are regularly employed in the majority of the classes offered in the department (WELD 40, WELD 51, WELD 70A, WELD 70B, WELD 70C, WELD 80, WELD 81, and WELD 90B)</p>	<p>Replacement of the inoperative machines will allow us to teach more students, more efficiently. We are currently sharing a single Plasma Cutter with up to 48 students at a time (non-COVID), which drastically limits the time we can spend teaching students how to use these machines. Additionally, the replacement of the broken welding power supplies will allow students to not have to share machines during times when the lab is at full capacity (between 4-6 days a week non-COVID).</p>
Fire	Stakebed truck with lift gate	\$65,703.93	1	<p>The Fire Academy takes place in several off-site locations, including the Chino Valley Independent Fire District Training Center. Logistically this necessitates the constant movement of tools and equipment to several different training sites requiring the use of a reliable vehicle to transport this equipment. The current vehicle is a severely worn donated 1995 truck. The capability and capacity of the truck necessitate several</p>	<p>The use of a more effective vehicle, through the carrying of more equipment, will reduce down-time of the trainees with the delivery of required equipment for use on a specific training event. This will provide more valuable training time to occur for our students. The efficiency of the use of a lift gate in the loading and unloading process of equipment will also increase the training time of the cadets. The lift gate and ability to drop the sides</p>

				inefficient round trips from campus to the off-site locations on any given day. The Advisory Committee has identified the need for a stake bed vehicle to safely transport, load, and unload equipment, to reduce potential safety hazards and increase efficiencies.	of the stake bed will drastically reduce the possibilities of strains and other injuries to staff and cadets. Lastly, a newer vehicle will be less prone to vehicle breakdowns, therefore, it will reduce delays or outright deliver-ability of equipment for more training efficiencies.
Aero	Survey Mapping software licensing, mapping software, supplies for poles and mounting, Matrice 300 drone	\$21,936.95	2	A key commercial pilot growth opportunity for unmanned aeronautics students is survey mapping which is one of the most highly compensated and in-demand skill sets. To support development of survey mapping skill sets at Mt. SAC, we have made investments in platforms such as the Wingtra and eBee X aircraft, and sensors like the MicaSense RedEdge. Purchase of a RTK multicopter (real-time kinematic) and survey-grade drone equipment such as the Arrow 100 GPS receiver improves student commercial pilot skill sets and complements skills gained with the RTK equipment. Purchase of software such as Esri's ArcGIS Pro complements our existing investment in the Pix4D platform and supports our program goals and new courses.	A key commercial pilot growth opportunity for unmanned aeronautics students is survey mapping which is one of the most highly compensated and in-demand skill sets. To support development of survey mapping skill sets at Mt. SAC, we have made investments in platforms such as the Wingtra and eBee X aircraft, and sensors like the MicaSense RedEdge. Purchase of a RTK multicopter (real-time kinematic) and survey-grade drone equipment such as the Arrow 100 GPS receiver improves student commercial pilot skill sets and complements skills gained with the RTK equipment. Purchase of software such as Esri's ArcGIS Pro complements our existing investment in the Pix4D platform and supports our program goals and new courses.
Aero	Autel Evo II drone thermal bundles and Anafi Parrot multi-sensor drone	\$31,685.38	3	Nighttime operations is a critical growth opportunity for unmanned pilots. Investment in drone lighting, as well as thermal capable drones, will support commercial operations such as inspection and public safety, identified as primary for growth of our program and development of student skills. Night operations have a unique set of risks and challenges and purchase of these platforms and equipment will allow our	Unmanned Aeronautics as an industry is undergoing intense growth and so too is the unmanned program at Mt. SAC. New regulations from the FAA as recently as January 2021 have created brand new use cases which we must pivot to support including nighttime, beyond visual line of sight (BVLOS), and operations over people (OOP.) New standards for pilot training have emerged from the National Institute of Standards and Technology

				students to meet these challenges directly in real life skill building scenarios. Development of these courses is a key differentiator for the College as there are very few opportunities available for hands on experience and training in nighttime UAS operations. Additionally, the Parrot Anafi USA is one of the few platforms approved by the US government for operational use.	(NIST.) In response to this rapid growth, we have defined four new courses in addition to current course offerings. The UAS degree and certificate programs and new coursework need intense focus and will depend upon additional technology resources to support this growth including hardware and software. This industry is moving very quickly, and we will need to stay current with technology and practices.
Aero	Three drone custom build kits	\$13,424.70	4	Using the aircraft engineering design process, our students will engineer unmanned aircraft (drones) from the ground up. This is a different experience from using commercial off the shelf (COTS) aircraft. This proposal is for purpose-built drones for unmanned operations that can be expanded and built upon. With a payload limit of 7 pounds, students will design and engineer custom devices such as drop mechanisms, incorporate parachutes, engineer redundant control systems, and design advanced components such as spotlight cameras and winch mechanisms. This purchase will let us take high quality components and assemble these into trusted utility platforms for students to learn on. We will also be able to teach unmanned aircraft maintenance without violating any manufacturer warranties.	Unmanned Aeronautics as an industry is undergoing intense growth and so too is the unmanned program at Mt. SAC. New regulations from the FAA as recently as January 2021 have created brand new use cases which we must pivot to support including nighttime, beyond visual line of sight (BVLOS), and operations over people (OOP.) New standards for pilot training have emerged from the National Institute of Standards and Technology (NIST.) In response to this rapid growth, we have defined four new courses in addition to current course offerings. The UAS degree and certificate programs and new coursework need intense focus and will depend upon additional technology resources to support this growth including hardware and software. This industry is moving very quickly, and we will need to stay current with technology and practices.
Tech Theater	Creative Connors Revolver Machine or Kit	\$22,031.40 or \$29,170.80	2	Professional Regional Theaters and Themed Entertainment Venues hardly do a single production without automation. Our TTAC's biggest recommendation during this year's meeting was to teach students how to "program something to move." Our TT	By incorporating this machinery into our program, both classroom learning and productions, our students will be prepared to use automated scenery in the professional / post educational world. The "Revolver" is a machine that can rotate a turntable of any size on the

				<p>Program has taken the first steps towards incorporating automation into our shows, purchasing all of the brains to automate scenic pieces, but without this machine, the brains don't have anything to control. We can rent this until we can afford it (\$400/week), but purchasing it would allow us to train with it not only on shows (THTR 13), but also in our classroom (THTR 14, 21, 22, 27). The kit is requested if this is granted WITH our first priority ask, as we only have brains to control one piece at a time, and the kit allows for a second automation.</p>	<p>stage. It involves learning how to program that technology, set it up, build the turntable, and ensure it is safely operating; all of which are individual jobs and skills that get people hired in the industry. Having this kind of technology is also a huge draw to a program like ours, which is new and quickly growing. If students know they will be training on the relevant (21st Century) equipment they are more likely to come to our program, as opposed to Cypress or Fullerton College, who have already implemented automated scenery into their productions.</p>
Tech Theater	15 iPad Pros for Digital Design	\$19,578.84 (12.9") or \$16,950.84 (11")	3	<p>This equipment would directly fill a concern raised by our advisory committee this year, addressing the need for training in digital design and remote control of lighting fixtures. These iPads would serve the Intro to Design and Stage Lighting Class, as well as future classes in the design disciplines. Students would be introduced to essential digital communication software (such as vectorworks, procreate and oscRFR), enhancing the quality of their portfolios and likely success they find entering the workforce after Mt.SAC for having this experience. The larger screens (12.9") are better suited for this type of design work, but the 11" screens are absolutely fine, if that is how these devices can be funded / afforded.</p>	<p>The Theater Department at Mt. SAC has had a long running, behind the scenes mantra of "Training Theater Audiences." The faculty who coined and perpetuated this mantra are no longer with us, but that reputation is still one that our department is working feverishly to shed. In the last two academic years we have advanced the training and technology of our technical theater program decades forward, incorporating projection and purchasing the beginnings of an automation system, so that our shows more closely represent the production qualities of a regional theater, rather than a community theater. Having these iPads, the current flagship for digital design hardware will further distance us from our previous reputation, and help to distinguish us as the serious, professional training program that we have become, and intend to remain. This purchase would demonstrate that we are teaching 21st century methods for 21st century professionals.</p>

Tech Theater	Makerbot Replicator & Glowforge Pro with air filter	\$10,456.75	4	<p>Having this equipment in our department would allow us to update the content we are teaching within our classes to include digital maker and CNC softwares. It would also be the beginning of our design lab, which is a need that our advisory committee directed us to address as soon as possible. These tools would be utilized in the first class of the tech theater certificate (THTR 14), and that knowledge would be built upon in every production and class thereafter, learning how to use these basic tools for everything from properties construction to model making, including costuming. It also stands that once our students are suitably comfortable on the programming and use of this type of machine, they will be better able to take advantage of our Maker Space for production work.</p>	<p>Students who can program and operate CNC and Maker type machinery are instantly hire-able as designers assistants in the theatrical and live production industry. Experience in the industry shows it to be a few big design studios with dozens - hundreds of assistants (paid at union wages) executing the vision of the design in drafting and modeled formats. Using laser cutters, 3D printers, CNC routers and other Maker technology is the next step in this knowledge base to be employable at that level. We, as a program, want our students to be fully prepared with today's technology, and the understanding of how it works, so they will remain vibrant contributors to the theatrical workforce of tomorrow's world.</p>
Welding	10 body hammer/dolly sets, 1 English wheel, 1 shrinker/stretcher	\$13,458.35	2	<p>All of these machines are needed to supplement the machinery and tools on hand to be able to teach our Automotive Fabrication course, WELD 91, efficiently. Currently, the department does not have any body hammers and dollies, and only possesses a single English Wheel and a single Shrinker/Stretcher. While several more of these machines would be even better, at least one more of each will allow for greatly expanded teaching opportunities using these machines. Additionally, all of the equipment sought in this application can be utilized</p>	<p>Procurement of these machines and tools will allow us to teach students how to use these tools in a significantly more efficient and in-depth manner. Student wait times to use the English Wheel and Shrinker/Stretcher in particular will be halved (at least), while students will also be able to complete detailed projects using the body hammers and dollies without the worry of delaying other students.</p>

				by the Art Welding and Fabrication course (WELD 30), as well as our Construction Fabrication course, WELD 80.	
Welding	3 multimatic welding machines & 3 MP210 welding machines	\$19,020.23	3	Before class capacity changes were mandated due to COVID-19, our department was essentially at-capacity, as far as available machines and welding booths were concerned. In order to allow for more classes to be added, we need to add more flexible capacity to our welding machine inventory to allow for more utilization of our outdoor and flexible-use lab space. To that end, the addition of these machines will allow for more enrollment and better utilization of our existing space for our anticipated return to full capacity. Additionally, these machines will also allow for more outdoor instruction, which would be in line with COVID protocols should they continue to be required for the foreseeable future. These machines can be utilized by every single course offering in our department.	The addition of these six machines will allow for a substantially increased level of flexibility in our department to meet the anticipated increase in enrollment we will see in the coming semesters. The ability of these machines to be wheeled around the shop coupled with their ability to weld using any of the welding processes we teach, makes these excellent machines to fill shortfalls in our program, both with space and available welding machines on an as needed basis. Additionally, the fact that these machines can be used outside also opens up the possibility of adding more sections of classes thereby increasing the number of students we can serve in a given semester.
Fire	Wildland Fire Equipment	\$267,703.42	2	The US Forest Service employs more than 10,000 employees. Additionally, the Bureau of Land Management and many Counties across the country employ firefighters to combat Wildland fires. The Bureau of Labor Statistics show a 6% higher than average job growth for firefighters between 2019-2029. An often overlooked fact is that the private industry employs Firefighting crews, engines, dozers, and other specialized equipment. The National Wildland Suppression Association is a leading group for private wildland firefighters	This program could assist our draw for more non-traditional students within our program. Females make up approximately 10 percent of Federal Wildland firefighters with their numbers continually rising. With the growth of this industry in both public and private sectors Mt.Sac could gain ground in our quest to fill the job market with our highly trained students. This equipment and training would give all our students a highly desirable skill-set to both allow them to acquire positions, but also, if not more important, give them the tools to

				representing over 150 private companies in 16 states and can field 12,000 as needed. The need for Wildland firefighters has never been greater and the proper training has been evident as many Wildland firefighters have been injured and several fatalities occur yearly.	be safer in a significantly dangerous work environment.
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