

Associated Students of the University of California, Merced
**Bill#12 - American Institute of Aeronautics and Astronautics (AIAA)
Design, Build, Fly Team**

This Bill will sponsor UC Merced's AIAA's Design, Build, Fly (DBF) Team to build a competition worthy aircraft in order to compete in the annual international competition to be held on April 20-23, 2017 in Tucson, Arizona.

Introduced by:

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Bill#12 -Funding for American Institute of Aeronautics and Astronautics (AIAA) Design, Build, Fly Team (Aeronautics Division)

Background: The American Institute of Aeronautics and Astronautics (AIAA) is a student oriented organization that focuses on providing students with hands on experience in the aeronautical field, since UC Merced is still in its adolescent stages and it does not yet offer an Aerospace/Aeronautical Engineering degree. The absence of an Aerospace/Aeronautical Engineering Degree has urged students to unite as the AIAA at UC Merced, and together pursue post-college career opportunities in the Aerospace/Aeronautical field. AIAA at UC Merced is a student charter for the professional engineering society of American Institute of Aeronautics and Astronautics_(AIAA) that focuses its approach with hands on experience within the central valley allowing members to build their resumes and enter the Aerospace/Aeronautical field after college. It is an organization that will not only focus on impacting the University community but the community of Merced as a whole. The following are AIAA's mission and vision statements.

Mission: "AIAA's mission is to address the professional needs and interests of the past, current, and future aerospace workforce and to advance the state of aerospace science, engineering, technology, operations and policy to benefit our global society. Vision: AIAA's vision is to be the shaping, dynamic force in the aerospace profession – the forum for innovation, technical excellence, and global leadership."

We currently have over 60 active members of AIAA at UCM. Since being recognized, the organization has participated and hosted numerous workshops around aeronautics and aerospace. Our organization is still in its infancy and would like to prosper by providing hands on engineering projects. We find it vital that we start to build the skills of our members, and we can accomplish this by competing in AIAA's yearly student design build fly (DBF) competition. DBF is a competition that brings together university students from around the world to showcase their abilities in designing an aircraft.

From the AIAA DBF website:

"The AIAA through the Applied Aerodynamics, Aircraft Design, Design Engineering and Flight Test Technical Committees and the AIAA Foundation invites all university students to participate in the Cessna/Raytheon Missile Systems Student **Design/Build/Fly** competition. The contest will provide a real-world aircraft design experience for engineering students by giving them the opportunity to validate their analytic studies. Student teams will design, fabricate, and demonstrate the flight capabilities of an unmanned, electric powered, radio controlled aircraft which can best meet the specified mission profile. The goal is a balanced design possessing good demonstrated flight handling qualities and practical and affordable manufacturing requirements while providing a high vehicle performance."

Last year AIAA was funded by ASUCM to purchase materials to construct a mission specific unmanned aviation vehicle for the Design Build Fly international competition. At the competition the AIAA UC Merced chapter finished in the top $\frac{2}{3}$ quartile in this 100 team competition. The AIAA chapter at UC Merced will work to collect funds that would further go to materials to build the aircraft throughout the whole academic year until the competition date.

Purpose: The purpose of this bill is for Senate to allocate the amount of \$5305.35 to assist with the costs of materials to build an aircraft for the AIAA's Aeronautics Division Design Build Fly competition, which would take place April 20-23, 2017.

1. **Whereas:** The Preamble of the Constitution of the Associated Students of the University of California, Merced communicates that ASUCM promote the general educational welfare and enhancement of the academic benefits and opportunities offered for the continued success of the students of the University of California, Merced; and,
2. **Whereas:** This competition will allow the students to gain vital engineering experience and allow them to utilize the theories they have learned as a student at the University of California, Merced
3. **Whereas:** Students build exposure for our university as well as showcase and test their theories on an international scale competition; and
4. **Whereas:** Build an outreach to other student charters and industry and allow them to recognize the quality of students the university produces; and,
5. **Whereas:** Each member will gain and increase their current skill set, and showcase their knowledge in engineering. Following a specific timeline and mission specific competition. They will undergo similar industry like situations. Thus preparing them to enter industry and be aware of what will be needed from them professionally; and,
6. **Whereas:** Funding requests by student organizations receiving general funding must be predominately educational, recreational, or social in nature, this is predominantly educational; and
8. **Whereas:** Membership must be open to all individuals within the undergraduate student body; and
9. **Whereas:** The purpose of benefiting the university as a whole as we compete in a completion representing the school; and
10. **Whereas:** Past and expected future performance of the specific program/ event, as we have competed with some of the best schools around, we have produced results; and
11. **Whereas:** Ten students from the AIAA organization will be representing UC Merced in a national competition against other institutes which will be held on April 20-23 of the year 2017.

12. **Whereas:** The school of engineering will be covering all transportation expenses for this competition.

13. **Whereas:** The cost breakdown for the competition is presented in Appendix A; therefore,

Be it Enacted: ASUCM allocate \$5305.35 from ASUCM to AIAA to purchase materials to build an aircraft for the AIAA Design Build Fly competition, which would take place April 20-23, 2017.

Appendix A

Item	Cost	Qty	Store	Total Cost
Spektrum DX7S Transmitter with AR8000 Receiver	\$249.99	1	http://www.multicopterwarehouse.com/spektrum-dx7s-7channel-dsmx-transmitter-with-ar8000-receiver?search=dx%207	\$249.99
Cobra Motor	\$62.99	4	http://innov8tivedesigns.com/cobra-c-3525-12-brushless-motor-kv-650	\$251.96
Elite NiMh Battery Cell	\$5.50	50	http://www.cheapbatterypacks.com/product/23/2/Elite-5000-SC.aspx	\$275
YGE ESC 60 AMP	\$139.99	4	http://www.helidirect.com/yge-60-lv-electronic-speed-controller.html	\$ 559.96
Turnigy Servos	\$20.30	20	http://www.hobbyking.com/hobbyking/store/__11626__Turnigy_8482_TGY_375DMG_w_Heat_Sink_DS_MG_2_3kg_11sec_11_5g.html	\$406
Spektrum AR610 Receiver	\$39.99	4	https://www.spektrumrc.com/Products/Default.aspx?ProdID=SPMAR610	\$159.96
APC Propellers	\$5.99	10	http://innov8tivedesigns.com/apc-14x7e-propeller	\$59.90

Turnigy Balance Charger	\$139.30	3	http://www.hobbyking.com/hobbyking/store/__57095__Turnigy_Reaktor_30A_1000W_Balance_Charger.html	\$417.9
Turnigy Power Supply	\$53.79	3	http://www.hobbyking.com/hobbyking/store/__76184__Turnigy_Reaktor_Pro_350W_23A_Power_Supply_100_240V_AC_.html	\$161.37
Parallel Charging Board	\$8.99	2	http://www.hobbyking.com/hobbyking/store/__14856__Hobbyking_Parallel_charging_Board_for_6_packs_2_6S_XT_60_.html	\$17.98
Parts Manufacturing Mill	\$280	1	http://www.hobbyking.com/hobbyking/store/__90843__Malyan_M150_i3_3D_Printer_US_Plug_.html	\$280
Programming Cards	\$6.25	2	http://www.hobbyking.com/hobbyking/store/__20698__Hobbyking_YEP_ESC_Programming_Card.html	\$12.5
YEP BEC	\$14.05	3	http://www.hobbyking.com/hobbyking/store/__40274__Hobbyking_YEP_20A_HV_2_12S_SBEC_w_Selectable_Voltage_Output.html	\$42.15
Economy Rollers 1/2in. x 3in	\$6.95	3	http://www.tapplastics.com/product/supplies_tools/fiberglass_tools_supplies/economy_rollers/184	\$20.85
Venom Steel Nitrile Cleaning Gloves	\$18.48	2	http://www.lowes.com/pd_622082-68591-VEN6145R_?productId=50370846&pl=1&Ntt=gloves	\$36.96
PVA Mold release Liquid, 1 gallon	\$42.45	2	http://www.tapplastics.com/product/fiberglass/mold_releases/tap_pva_mold_release_liquid/67	\$84.9
Paint Brushes with Plastic	\$1.00	24	http://www.dollartree.com/house	\$24.00

Handles, 3-pc. Sets			hold/auto-home-improvement/painting-supplies/Tool-Bench-Paint-Brushes-with-Plastic-Handles-3-pc-Sets/500c550c554p346232/index.pro?method=search	
Graco Truecoat 3-Pack 32-oz Paint Sprayer Liners	\$6.49	4	http://www.lowes.com/pd_618293-48690-17A226?productId=50217333&pl=1&Ntt=paint+cups	\$25.96
Revell Balsa 3/8x1/2x36" (10)	\$19.90	4	http://www.hobbyshipper.com/cgi-bin/wsr600p?V=RMX&I=RMXR7167	\$79.6
Revell Balsa Sheet 1/16x4x36" (20)	\$49.8	2	http://www.hobbyshipper.com/cgi-bin/wsr600p?V=RMX&I=RMXR7301	\$99.6
Revell Birch Plywood 3mmx12x24" (6)	\$26.94	2	http://www.hobbyshipper.com/cgi-bin/wsr600p?V=RMX&I=RMXR7681	\$53.88
MEKP Liquid Catalyst, 2 oz	\$4.15	2	http://www.tapplastics.com/product/fiberglass/polyester_resins/tap_mekp_liquid_catalyst/40	\$8.3
Laminating Resin (Bond Coat), 1 gallon	\$54.75	2	http://www.tapplastics.com/product/fiberglass/polyester_resins/tap_bond_coat_laminating_polyester_resin/37	\$109.5
Titebond 16-oz Wood Glue	\$3.98	2	http://www.lowes.com/pd_86092	\$7.96

Adhesive			-970-65064?productId=3398000&pl=1&Ntt=wood+glue	
Carbon fiber tube 0.375 x 0.459 x 60 inch	\$40.99	5	https://www.rockwestcomposites.com/45524	\$204.95
E-Glass Modified Twill (38 in. W), Linear yard	\$9.45 \$884	6 1	http://www.tapplastics.com/product/fiberglass/fiberglass_fabrics/modified_twill/84	\$56.70 \$884
760 SPECKLED CLAY (PLACE HOLDER) 25 LBS	\$28.88	2	http://www.clay-king.com/claybodies.htm	\$57.76
Top Flite MonoKote Transparent Yellow 6 Foot Roll TOPQ0303	\$14.99	4	http://www.rcplanet.com/Top_Flite_Transparent_Yellow_MonoKote_p/topq0303.htm?codesf=4012546203&gclid=Cj0KEQjwnMOWBRCAhp-ysqCwypkBEiQAeSy1-cRKbCpCbEoHQsvsP32QYvQF2ZfSF5bkFUZyUkosvcaAnoG8P8HAQ	\$59.96
Top Flite MonoKote Sapphire Blue 25' TOPQ1226	\$54.99	1	http://www.rcplanet.com/Top_Flite_Sapphire_Blue_25_Foot_MonoKote_p/topq1226.htm?codesf=4012546173&gclid=Cj0KEQjwnMOWBRCAhp-ysqCwypkBEiQAeSy1-UAObuMgcKDiBujZ5sV1jN5hb2-jtLQUsf4vgfgMc7caAh6U8P8HAQ	\$54.99
MonoKote Metallic Gold 6'	\$17.99	3	https://www.hobbyzone.com/topq0404.html?gclid=Cj0KEQjwnMOW	\$53.97

			wBRCAhp-ysqCwypkBEiQAeSy1-V-m-WNM2UOit6xDa4rzqRYfoEtA0u49NMWqIOVYIzEaAmry8P8HAQ	
Wet/Dry Vac	1	\$59.97	http://www.homedepot.com/p/RID-GID-9-gal-Wet-Dry-Vacuum-WD0970/205144662	\$59.97

Appendix B

Subtotal cost		4878.48
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Appendix C

Sub Total		4878.48
Tax	8.75%	426.87
Grand Total		5305.35

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Design, Build, Fly Team

Date Introduced: _____

Submitted Senate Committee(s):

Date Settled: _____

Budget and Finance

Student Advocacy

Veto Expires: _____

Student Activities

Academic Affairs

Other _____

Comments/Recommendations:

Senate Action:

Approved

Not Approved

Senate Chair Authorization: _____ Date: _____

Gabriel Hulbert, Internal Vice President

President Action:

Approved

Not Approved

President's Signature: Katelyn Fitzgerald Date: _____

Katelyn Fitzgerald, President