



# SAE Aero Micro: Hardware Status Update #2

Ryan Downey

Katrina Kevorkian

Spencer Makar

Hector Medrano

Conner Nolan

Ethan Shoemaker



# Semester Progress To Date



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Manufactured carbon fiber airfoil

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Purchased new batteries

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Manufactured  $\frac{3}{4}$  of carbon fiber fuselage

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Designed and manufactured internal wing structure

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Iterated on previous fuselage design

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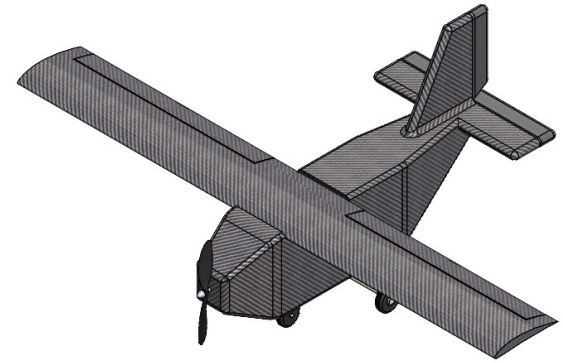
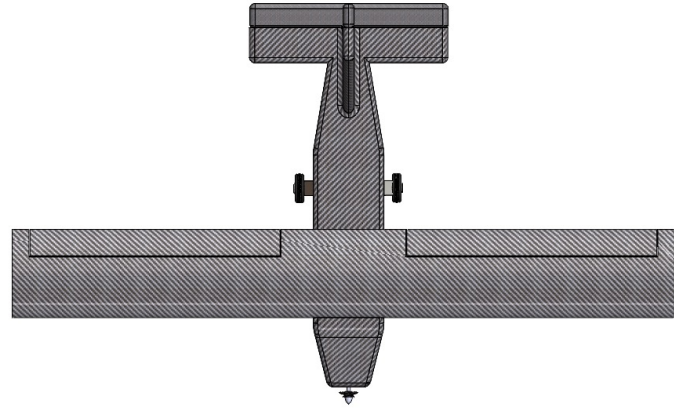
Developed foam model of fuselage

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Completed  $\frac{3}{4}$  of manufacturing of carbon fiber fuselage

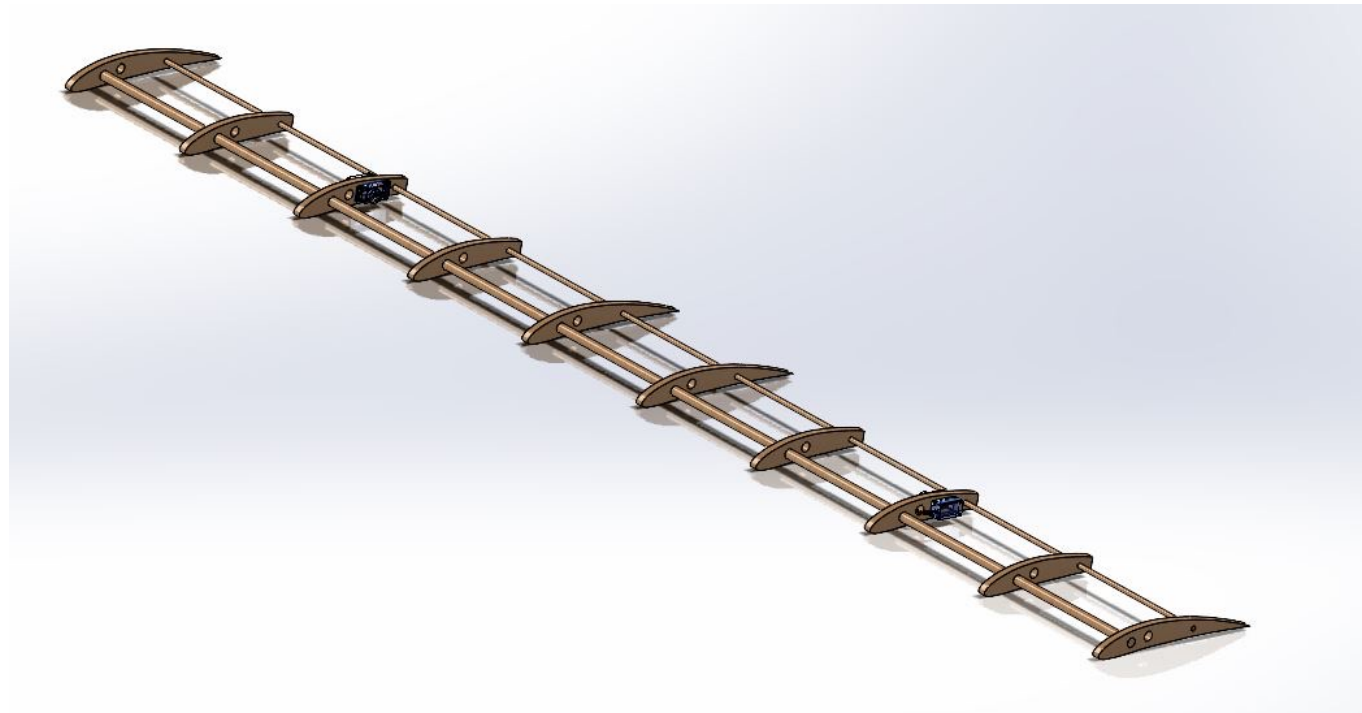


CAD



CAD  
(cont.)

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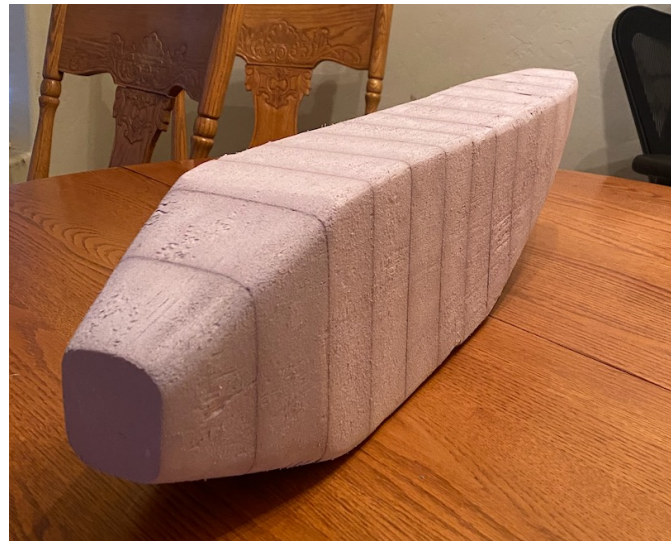


# Manufacturing Update

- Manufactured:
  - Complete Wing (Top half/bottom half)
  - Internal structure of wing (balsa wood)
  - $\frac{3}{4}$  of fuselage
  - Aileron links
  - Ailerons
  - Endcaps to secure wing halves
- Yet to be manufactured:
  - Carbon wet layup for bottom of fuselage
  - Empennage control surfaces (rudder/elevators)
- Estimated percentage of total manufacturing complete: ~80%



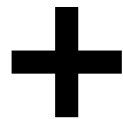
# Fuselage Manufacturing Process – Foam Model



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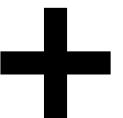


# Fuselage Manufacturing Process – Wet Layup



# Purchasing

- Purchased:
  - 1500 mAh batteries (x6)
  - 9x4.5 Propellers (x12)
  - Motor
  - Balsa wood rods
  - Servo motors (x7)
  - ESC
  - Power Limiter
  - Balsa wood dowels
- Yet to be purchased:
  - Two flat carbon fiber plates
- Percentage of purchasing complete: ~95%  
(all on hand)



# Bill of Materials (Purchase)

## SAE Aero Capstone Project

NOTE: Difference columns in table will show if actual went over estimated amounts. Red numbers show went over (negative) and black shows under numbers (positive).

Area	Items	Primary Vendor	Manufacturer	Lead Time	Quantity	Make/Buy	Part Status	Itemized Cost (\$)	
								Price Per Part	Total Price
Electronics	Adaptors	Amazon	Share Goo Store	N/A	1	Buy	Assembled	\$9.42	\$9.42
Electronics	1000mAh Battery	Hobby King	Hobby King	N/A	3	Buy	Assembled	\$17.01	\$51.03
Electronics	Connectors	Hobby King	Hobby King	N/A	1	Buy	Assembled	\$3.03	\$3.03
Electronics	SAE Competition Power Limiter	SAE	SAE	N/A	1	Buy	Assembled	\$83.00	\$83.00
Electronics	Servos	Hobby King	Hobby King	N/A	5	Buy	Assembled	\$3.49	\$17.45
Electronics	Speed Controller	Hobby King	Hobby King	N/A	1	Buy	Assembled	\$21.99	\$21.99
Electronics	Wires	Amazon	National Hardware Store	N/A	1	Buy	Assembled	\$9.89	\$9.89
Electronics	1500mAh Battery	Hobby King	Hobby King	3 Weeks	6	Buy	In House	\$23.18	\$139.08
Powerplant	9x4.7 V3 Propeller	ACP	ACP	3 Weeks	4	Buy	In House	\$2.84	\$11.36
Powerplant	9x4.7 V3 Propeller	ACP	ACP	N/A	1	Buy	Assembled	\$2.84	\$2.84
Tail	Elevator	N/A	N/A	1 Week	1	Buy	03.05.22	N/A	N/A
Tail	Rudder	N/A	N/A	1 Week	1	Buy	03.05.22	N/A	N/A
Wings	Contol Horn	MakersLab	MakersLab	N/A	2	Buy	In House	Donated	Donated
Wings	Dowel Rods 1/8x12	Amazon	Woodpeckers	2 Weeks	1	Buy	In House	\$9.19	\$9.19
Wings	Dowel Rods 1/4x12	Amazon	Woodpeckers	2 Weeks	1	Buy	In House	\$8.19	\$8.19
Landing Gear	Front Landing Gear Pin	N/A	N/A	N/A	1	N/A	Assembled	Donated	Donated
Landing Gear	Front Landing Gear Support	N/A	N/A	N/A	1	N/A	Assembled	Donated	Donated
Landing Gear	Front Support	N/A	N/A	N/A	1	N/A	Assembled	Donated	Donated
Landing Gear	Wheel	N/A	N/A	N/A	2	N/A	Assembled	Donated	Donated
Powerplant	Propeller Assembly Rod	N/A	N/A	N/A	1	N/A	N/A	N/A	N/A
Powerplant	Propeller Nozzle	N/A	N/A	N/A	1	N/A	N/A	N/A	N/A
Subtotal								\$194.07	\$366.47
Unexpected Costs (add 5% estimated)								\$9.70	\$18.32
Total costs								\$203.77	\$384.79



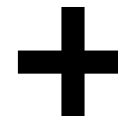


# Bill of Materials (Manufacture)

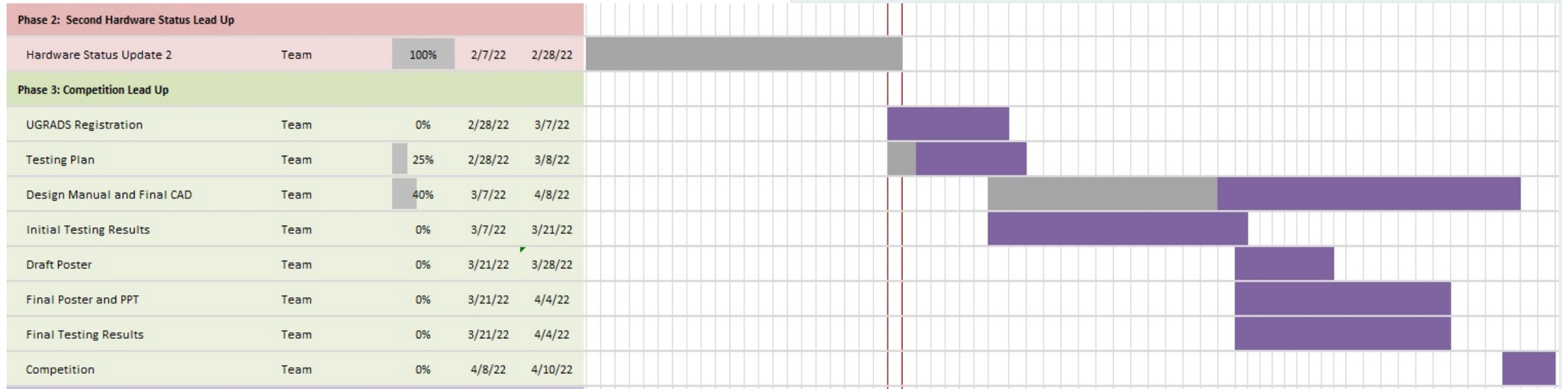
## SAE Aero Capstone Project

*NOTE: Difference columns in table will show if actual went over estimated amounts. Red numbers show went over (negative) and black shows under numbers (positive).*

									Itemized Cost (\$)	
Area	Items	Primary Vendor	Manufacturer	Lead Time	Quantity	Make/Buy	Part Status	Price Per Part	Total Price	
Fuselage	Fuselage	Novakinetics	Team	2 Weeks	1	Make	Being Manufactured	Donated	Donated	
Tail	Horizontal Stabilizer	Novakinetics	Team	2 Weeks	1	Make	Being Manufactured	Donated	Donated	
Tail	Vertical Stabilizer	Novakinetics	Team	2 Weeks	1	Make	Being Manufactures	Donated	Donated	
Wings	Balsa Wood Ribs	NAU IDEA Lab	Team	1 Day	1	Make	Assembled	Donated	Donated	
Wings	Airfoil	Novakinetics	Team	2 Weeks	1	Make	Assembled	Donated	Donated	
Subtotal								\$0.00	\$0.00	
Unexpected Costs (add 5% estimated)								\$0.00	\$0.00	
Total costs								\$0.00	\$0.00	



# Gantt Chart Updates



- Hardware Check Complete, 80% of manufacturing completed
- Items in mind: prep work for UGRADS, and testing
- Competition is coming up soon

