[Open-Source CEM and Additive Manufacturing, Year 1] 39%

[Whittier College]

[Profs. J. Hanson, F. Park, S. Zorba, S. Lagan, G. Piner] **Wednesday, June 7, 2023**

[Nayeli Camacho, Shaun Dunnick]

WBS	Task Names	Responsible Colleagues	Start	Net Work Days	Finish	% Complete	Calendar days	Days Complete	Days Remainin
			01-Jul-2024	300	23-Aug-2025	39%	419	118	301
	Hardware Acquisition (Weight=10%)	**[Prof. Hanson, N. Camacho, F. Park]**	**07-Jan-2024**	**149**	**01-Aug-2024**	**100%**	**208**	**56**	**152**
	3D Printer Acquisition								
	Obtain quotes	[Prof. Hanson]	01-Jul-2024	6	08-Jul-2024	100%	8	6	2
	Complete purchase	[N. Camacho]	10-Jul-2024	4	15-Jul-2024	100%	6	4	2
	3D Printer Filament Acquisition								
	Obtain quotes	[Prof. Hanson]	01-Jul-2024	6	08-Jul-2024	100%	8	6	2
	Complete purchase	[N. Camacho]	10-Jul-2024	4	15-Jul-2024	100%	6	4	2
	GPU/Multicore Server								
	Perform market comparison	[F. Park]	01-Jul-2024	24	01-Aug-2024	100%	32	24	8
	Obtain quotes	[Prof. Hanson]	01-Aug-2024	10	14-Aug-2024	100%	14	10	4
	Complete purchase	[N. Camacho]	14-Aug-2024	2	15-Aug-2024	100%	2	2	0
	RF Lab Hardware								
	RF cables and connectors	[Prof. Hanson]	01-Jul-2024	24	01-Aug-2024	100%	32	24	8
	Recruitment (Weight=5%)	**[Prof. Hanson]**	**23-Aug-2024**	**22**	**23-Sep-2024**	**100%**	**32**	**22**	**10**
	Standard undergraduate recruitment procedure								
	Undergraduate STEM researchers	[Prof. Hanson]	23-Aug-2024	22	23-Sep-2024	100%	32	22	10
	Undergraduate app/code designers	[Prof. Hanson]	23-Aug-2024	22	23-Sep-2024	100%	32	22	10
	Run Published CEM Codes (Weight=5%)	**[Prof. Hanson, Undergraduates 1,2]**	**23-Sep-2024**	**6**	**30-Sep-2024**	**100%**	**8**	**12**	**-4**
	Initial CEM Training, Linux Accts.								
	CEM Training	[Prof. Hanson, Undergraduates 1,2]	23-Sep-2024	6	30-Sep-2024	100%	8	6	2
	Account creation	[Prof. Hanson]	23-Sep-2024	6	30-Sep-2024	100%	8	6	2
	Updating CEM Code								
	Unpack and test original code	[Prof. Hanson]	25-Sep-2024	10	08-Oct-2024	100%	14	10	4
	Course Integrations (Weight=10%)	**[Profs. Hanson, Lagan, Zorba, Piner, and Park]**	**01-Jul-2024**	**40**	**23-Aug-2024**	**44%**	**54**	**40**	**14**
	Physics Courses								
	Algebra-Based Physics II	[Prof. Hanson]	01-Jul-2024	40	23-Aug-2024	100%	54	40	14
	Calculus-Based Physics II	[Prof. Hanson]	01-Jul-2024	40	23-Aug-2024	0%	54	0	54
	Optics	[Profs. Zorba and Hanson]	01-Jul-2024	40	23-Aug-2024	0%	54	0	54
	Electromagnetic Theory	[Prof. Hanson]	01-Jul-2024	40	23-Aug-2024	100%	54	40	14
	Computational Physics	[Profs. Lagan and Hanson]	01-Jul-2024	40	23-Aug-2024	0%	54	0	54
	Computer Science Courses								
	Computer Logic and Digital Circuit Design	[Prof. Hanson]	01-Jul-2024	40	23-Aug-2024	100%	54	40	14
	Digital Signal Processing	[Prof. Hanson]	01-Jul-2024	40	23-Aug-2024	100%	54	40	14
	Introduction to Data Science with Python	[Profs. Hanson and Piner]	01-Jul-2024	40	23-Aug-2024	0%	54	0	54
	Machine Learning	[Profs. Hanson and Park]	01-Jul-2024	40	23-Aug-2024	0%	54	0	54
	Primary CEM Research, Semesters 1 and 2 (Weight=10%)	**[Prof. Hanson, Undergraduates 1,2]**	**23-Aug-2024**	**190**	**15-May-2025**	**68%**	**266**	**120**	**146**
	CEM Simulations, Data Visualization								
	3D visualization of RF horn design	[Prof. Hanson, Undergraduate 1]	23-Sep-2024	60	15-Dec-2024	100%	84	60	24
	Time-domain computations, phase analysis	[Prof. Hanson, Undergraduate 1]	23-Sep-2024	60	15-Dec-2024	100%	84	60	24
	S-Parameters analysis	[Prof. Hanson, Undergraduate 1]	23-Sep-2024	60	15-Dec-2024	100%	84	60	24
	Inclusion of coaxial cable in simulation	[Prof. Hanson, Undergraduate 1]	23-Sep-2024	60	15-Dec-2024	50%	84	30	54
	Embed in various media	[Prof. Hanson, Undergraduate 1]	23-Sep-2024	60	15-Dec-2024	50%	84	30	54
	Machine Learning Optimization								
	Background research for algorithms	[Prof. Hanson, Undergraduate 2]	23-Sep-2024	169	15-May-2025	100%	235	169	66
	Learning genetic programming styles	[Prof. Hanson, Undergraduate 2]	23-Sep-2024	169	15-May-2025	100%	235	169	66
	CEM implementation with basic RF horn	[Prof. Hanson, Undergraduate 2]	23-Sep-2024	169	15-May-2025	50%	235	84	151
	RF antenna optimization	[Prof. Hanson, Undergraduate 2]	23-Sep-2024	169	15-May-2025	0%	235	0	235
	Additive Manufacturing, Semesters 1 and 2 (Weight=10%)	**[S. Dunnick, Undergraduate 3]**	**23-Aug-2024**	**190**	**15-May-2025**	**33%**	**266**	**120**	**146**
	Printing with PLA Filament								
	Updating prior designs	[S. Dunnick, Undergraduate 3]	23-Sep-2024	60	15-Dec-2024	100%	84	60	24
	Practice file format conversion	[S. Dunnick, Undergraduate 3]	23-Sep-2024	60	15-Dec-2024	100%	84	60	24
	Print test object	[S. Dunnick, Undergraduate 3]	23-Sep-2024	60	15-Dec-2024	100%	84	60	24
	Print PLA antenna model	[S. Dunnick, Undergraduate 3]	23-Sep-2024	60	15-Dec-2024	25%	84	15	69
	Printing with Electrifi Filament								
	Print test object	[S. Dunnick, Undergraduate 3]	15-Jan-2025	87	15-May-2025	0%	121	0	121
	Perform resistivity measurements	[S. Dunnick, Undergraduate 3]	15-Jan-2025	87	15-May-2025	0%	121	0	121
	Print simple antenna	[S. Dunnick, Undergraduate 3]	15-Jan-2025	87	15-May-2025	0%	121	0	121
	Print complex antenna	[S. Dunnick, Undergraduate 3]	15-Jan-2025	87	15-May-2025	0%	121	0	121
	Application Development, Semesters 1 and 2 (Weight=10%)	**[Prof. Hanson, Undergraduate 4]**	**23-Aug-2024**	**190**	**15-May-2025**	**48%**	**266**	**141**	**125**
	Creating Project Plan with Students								
	Creating kanban taskflow	[Prof. Hanson]	23-Aug-2024	22	23-Sep-2024	100%	32	22	10
	Experimenting with Android SDK	[Undergraduate 4]	23-Aug-2024	81	15-Dec-2024	100%	115	81	34
	Updating prior code	[Prof. Hanson]	23-Aug-2024	22	23-Sep-2024	100%	32	22	10
	Designing Visual Environment								
	Updating prior designs	[Undergraduate 4]	23-Aug-2024	81	15-Dec-2024	10%	115	8	107
	Displaying content on Android app	[Undergraduate 4]	15-Jan-2025	87	15-May-2025	10%	121	8	113
	Primary CEM Research, Summer 2025 (Weight=20%)	**[Prof. Hanson, Undergraduates 1,2]**	**15-May-2025**	**72**	**23-Aug-2025**	**0%**	**101**	**0**	**101**
	CEM Simulations, Data Visualization								
	Time-domain computations, phase analysis	[Prof. Hanson, Undergraduate 1]	15-May-2025	72	23-Aug-2025	0%	101	0	101
	S-Parameters analysis	[Prof. Hanson, Undergraduate 1]	15-May-2025	72	23-Aug-2025	0%	101	0	101
	Inclusion of coaxial cable in simulation	[Prof. Hanson, Undergraduate 1]	15-May-2025	72	23-Aug-2025	0%	101	0	101
	Embed in various media	[Prof. Hanson, Undergraduate 1]	15-May-2025	72	23-Aug-2025	0%	101	0	101
	Machine Learning Optimization								
	3D visualization of *optimized* antenna	[Prof. Hanson, Undergraduate 2]	15-May-2025	72	23-Aug-2025	0%	101	0	101
	Explore array optimizations in ice, Hpol	[Prof. Hanson, Undergraduate 2]	15-May-2025	72	23-Aug-2025	0%	101	0	101
	Additive Manufacturing, Summer 2025 (Weight=20%)	**[S. Dunnick, Undergraduates 1,3]**	**15-May-2025**	**72**	**23-Aug-2025**	**0%**	**101**	**0**	**101**
	Printing with Electrifi Filament								
	Updating prior designs	[S. Dunnick, Undergraduate 3]	15-May-2025	72	23-Aug-2025	0%	101	0	101
	Continue printing complex antenna	[S. Dunnick, Undergraduate 3]	15-May-2025	72	23-Aug-2025	0%	101	0	101
	Real S-parameter measurement	[Prof. Hanson, Undergraduate 3]	15-May-2025	72	23-Aug-2025	0%	101	0	101
	Real radiation pattern measurement	[Prof. Hanson, Undergraduate 3]	15-May-2025	72	23-Aug-2025	0%	101	0	101