

MMA Navigation Series Proposal

This 5-class Navigation Series, designed in collaboration with Lt. Jordan, brings cadets from precise GPS timing through hands-on navigation games, AI-assisted mapping, global radio exploration, and finally to the historical roots of modern communication. Each class emphasizes teamwork, problem-solving, and the lineage of navigation technology.

Class 1 – Time & Position Fundamentals

- GPSNTP tested ARRL class (1 hour).
- Android/iOS 'two-integer' navigation game: walk a 30-ft circle using crude GPS integers.
- Prize incentive (e.g., jar of pennies with matching dates).

Takeaway: Precision vs. approximation, teamwork under degraded accuracy.

Class 2 – Mapping & Motion

- Pairs of cadets log timestamp + integer data while walking football field criss-cross paths.
- Overlay paths in color to reveal a collective artwork.

Takeaway: Data logging, coordinate systems, and big pictures emerging from small errors.

Class 3 – ChatGPT-as-Navigator

- Problem-solving with ChatGPT: e.g., create a KMZ of a point offset from MMA's wind turbine.
- Convert feet into lat/long deltas and visualize in Google Earth.

Takeaway: How to phrase navigation problems precisely for AI copilots.

Class 4 – Radio Navigation & World Signals

- Build a \$4 Pico WSPR beacon (1/100 W, 2×AA batteries) and track signals globally.
- Explore KIWI SDR network, listen to WWV time signals.

Takeaway: From whispers to the world – propagation, SNR, and the vastness of global radio.

Class 5 – History, Fieldwork, and the Future

- Field trip: Marion (Marconi's 300 kW spark, coherer demo).
- Field trip: Chatham Marconi (world's greatest coastal station).
- Wrap-up: LLMs in navigation – how cadets can use AI as a partner.

Takeaway: Standing on the shoulders of giants: Marconi → WSPR → ChatGPT.