Title of lesson	Introducing, through practical experience and demonstration, the fundamentals of radio transmission and reception, propagation and health & safety.		
Module theme	BSW – session 3	Date & time	TBC
Class background	Y10-13. This session will be a follow-on session for any student who wishes to gain their Foundation amateur radio licence. They will take part in some radio communications using voice and data modes within Ofcom rules.		
Lesson focus	Using the practical **use** of a radio station: • **know and understand** the principles of High Frequency (HF) electromagnetic radiation and transceiver architecture, feeders, propagation, the value of the ionosphere, station design • **apply** health and safety in use, Ofcom/RSGB band plans for various bands and modes • **evaluate** EMC, SNR and their own use of the station.		
Prior knowledge	None assumed		
Success criteria	**All** will use the radio station under supervision within Ofcom rules. **Most** will gain further understanding of the station's principles, construction and operation, including different modes. **Some** will enjoy the session sufficiently to want to carry on and do more.		

Links to UTCSD Student Leaver Profile		
Core Skills	**Professional & Career experiences**	**Academic & Technical knowledge**
Communicate Through the radio at a long distance including dealing with foreign languages, including noting different time zones across the world. **Collaborate** Working with others, make a successful contact. **Persevere** while trying to contact a distant radio station **Reflect** on how well the station works and what would be needed to improve it. Note the importance of UTC and local time zones for logging.	**Gain qualifications** All work could lead to the Foundation amateur radio licence. **A new experience** Opening up another experience.	Gaining an experience of taking part in a technical activity that is new to them.

Respect the equipment and its value, and H&S considerations.		

Outline of lesson		
Event	**Content**	**Timing**
Introduction	Revision of previous sessions' learning Reminder of: • Operating procedure – Ofcom rules for supervision • What can and can't be said on the air – Communications law • Call signs and SES call (GB0UTC) • NATO alphabet and why • The "script" for a phone QSO • Logging UTC and local time zones (and why these are necessary, compare China) Introduction to data modes (FT4, FT8) and why we might want to use these modes.	
Development	Using the rig to try to make some QSOs on voice, including logging, within Ofcom rules. Reconfigure the rig and PC for data modes using WSJT-X software, taking care to ensure UTC synchronisation and the importance for data exchanges in this mode. Operate and make some QSOs, discussing coverage and distance. Brief introduction to signal-noise ratio and using dB to display SNR.	
Close	Outline of Foundation amateur radio licence study and examination Expressions of interest in continuing.	