

# NSW Year 12, Stage 6

## Biology (Term 4, 2018 +)

### *The brain: function, diseases, disorders and the future*

**MINDZ**  
**Brainplay**  
*fun neuroscience*  
mindz.net.au

**Outcomes covered: BIO12-14, BIO12-15**

**Summary content:** An in-depth look at the brain including function, neuron communication, infectious brain disease and non-infectious brain disease. Students will use our EEG headsets to look inside their brain, look at neuron groups and what happens to these under certain disease conditions.

#### **Specific topics**

Toxoplasmosis, Parkinson's, Epilepsy, recreational drug effects on the brain, neuron electricity transfer, the future of the human brain.

**Time:** 90 minutes

**Number of students actively involved:** Up to 10 / up to 100 watching

#### **Overview**

1. Introduction: What's in our head?
2. Short video to explain concepts. The pain response and flight or fight. Brain waves introduced.
3. Overview of brain health
4. Infectious Brain Disease:
  - The amazing story of Toxoplasmosis and its impact on the brain
5. Non-infectious Brain Disease:
  - Parkinson's, Epilepsy and the amazing management technology
  - Alcohol and drug effects with emphasis on lifestyle choices in pregnancy and foetal brain development
6. Diagnosing brain disease: the EEG, its history, development and uses (2 x students demonstrate)
7. The EEG in the non-medical world: Gaming (4 x students demonstrate)
8. The Theta brainwave & its importance in exams (2 x students demonstrate)
9. Flying a drone with your brain: (2 students demonstrate)
10. **Careers in Science.** Round-up of the session and quick look at STEM careers.

