

Subject Description Form

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| Subject Code | APSS 5052 | | |
| Subject Title | Cognitive neuroscience in applied settings | | |
| Credit Value | 3 | | |
| Level | 5 | | |
| Pre-requisite / Co-requisite/ Exclusion | Nil | | |
| Assessment Methods | 100% Continuous Assessment | Individual Assessment | Group Assessment |
| | 1. Attendance and participation | 10% | -- |
| | 2. Seminar Group presentation | -- | 20% |
| | 3. Individual paper | 30% | -- |
| | 4. Final test | 40% | -- |
| | <ul style="list-style-type: none"> • The grade is calculated according to the percentage assigned; • The completion and submission of all component assignments are required for passing the subject; • Students must pass the specific component(s) (standard of passing) if he/she is to pass the subject. | | |
| Objectives | <p>The subject aims to enable students to:</p> <ol style="list-style-type: none"> 1. To develop awareness of the importance of the ever-expanding research and knowledge in cognitive neurosciences 2. To appreciate and be familiar with common investigative techniques used in cognitive neurosciences 3. To understand everyday behaviors and manifestation of brain disorders from neuroimaging and electrophysiological perspectives 4. To appraise the usefulness and limitations of common assessments and interventions used in clinical, educational and social settings 5. To develop critical thinking understanding brain and behavior relationships in bio-psycho-social contexts | | |

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| Intended Learning Outcomes | <p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. identify the importance of the ever-expanding research and knowledge in cognitive neurosciences b. formulate some conceptual framework to appreciate the relationships between cognition and investigative techniques in neurosciences c. understand the principles of applying theoretical knowledge to understanding everyday behavior and common types of brain disorders d. critically re-thinking the relevance and contributions as well as limitations of recent literature e. develop perspectives in understanding brain and behavior relationships in bio-psycho-social contexts |
| Subject Synopsis/ Indicative Syllabus | <p>Understanding the nervous system: Building blocks of the nervous system, brain geography and major subdivisions of the central nervous system, electrochemical signaling and neurotransmission</p> <p>Neuroanatomy and development: Cerebral cortex, limbic system, basal ganglia, hippocampus and diencephalon, brain-stem and cerebellum, cerebral specialization, integration of information between hemispheres, neural bases of mental functions, developmental aspects, plasticity and individual differences</p> <p>Methods of investigation: Populations of research participants, techniques of assessing brain anatomy and physiological functions including MRI, CT, EEG and fMRI, techniques for modulating brain activity, techniques for analyzing behavior and modeling brain-behavior relationships</p> <p>Motor control: Cortical and subcortical structures involved in motor control, motor disorders</p> <p>Perceptual processing: Visual and auditory processing, the “what” and “where” of the</p> |

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| | <p>visual system, object recognition and spatial cognition</p> <p>Language: Roles of the left and right hemisphere, neural organization of language as inferred from brain damaged patients and other populations</p> <p>Memory: Multiple memory systems, brain systems that contribute to encoding, consolidation and storage and retrieval, working memory and the relationship between memory systems, amnesia and other disorders of memory</p> <p>Attention: brain structures of involved in attention, network models of attention control, hemineglect and other clinical problems</p> <p>Executive function: Controlled versus automatic processes, goal-directed behaviors, higher order thinking, organization of the frontal lobe for executive function, working memory and executive function</p> <p>Emotion and social cognition: Cortical and subcortical contributions to emotion, emotional learning, motivation, incorporating emotion into decision making, regulating and communicating emotion, understanding the mental states of others.</p> <p>Broad-based phenomena: understanding the psychopathology of schizophrenia, depression, anxiety and addiction problems as well as developmental disorders</p> |
| <p>Teaching/Learning Methodology</p> | <p>Lectures will be used to introduce concepts and frameworks. Case discussions will be used to illustrate core concepts of assessment and treatment.</p> <p>For the seminars, students will be encouraged to identify and read relevant recent publications. They will have the opportunity to integrate research and practice issues.</p> <p>Laboratory sessions will give the students opportunity to know more about assessment principles and tools.</p> |

| Assessment Methods in Alignment with Intended Learning Outcomes | Specific assessment methods/task | % weighting | Intended subject learning outcomes to be assessed (Please tick as appropriate) | | | | |
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| | 1. Attendance and participation | 10% | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 2. Seminar group presentation | 20 % | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 3. Individual paper | 30 % | | ✓ | ✓ | ✓ | |
| | 4. Final test | 40 % | | ✓ | ✓ | ✓ | ✓ |
| | Total | 100 % | | | | | |
| <p>The quiz is to help students to develop a firm grasp of basic concepts. The individual paper and presentation are intended to develop independent and analytical thinking. Laboratory participation is to provide hands-on experience in investigative techniques. The grade is calculated according to the percentage assigned. The completion and submission of all component assignments are required for passing the subject. Student must pass the specific component(s) (standard of passing) if he/she is to pass the subject.</p> | | | | | | | |
| Student Study Effort Expected | Class contact: | | | | | | |
| | ▪ Lectures | | 18 Hrs. | | | | |
| | ▪ Seminars | | 21 Hrs. | | | | |
| | Other student study effort: | | | | | | |

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| | <ul style="list-style-type: none"> ▪ Private reading, self-reflection and writing task | 30 Hrs. |
| | <ul style="list-style-type: none"> ▪ Preparation for tutorial, seminar and supervised practices | 30 Hrs. |
| | <ul style="list-style-type: none"> ▪ Participation and practice | 18 Hrs. |
| | Total student study effort | 117 Hrs. |
| Reading List and References | <p><u>Main References</u></p> <p>Ward, J. (2015). The student's guide to cognitive neuroscience (4th ed.). psychology press.</p> <p>Journal papers recommended during lessons: referenced in powerpoint</p> <p><u>Supplementary</u></p> <p>Gazzaniga, M. S., Ivry, R.B., Mangun, G.R. (2018). Cognitive Neuroscience: The Biology of the Mind (5th ed.) W. W. Norton & Company.</p> <p><u>Journals</u></p> <p>Journal of Cognitive Neuroscience</p> <p>Nature Human Behaviour</p> <p>Neuroimage</p> <p>Neuropsychologia</p> | |