האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

# *The Hebrew University of Jerusalem*

## *Syllabus*

# *Cognitive and behavioral characteristics of pathological and normal brain aging - 51445*

*Last update 17-11-2016*

*HU Credits: 2*

*Degree/Cycle: 2nd degree (Master)*

*Responsible Department: psychology*

*Academic year: 0*

*Semester: 1st Semester*

*Teaching Languages: Hebrew*

*Campus: Mt. Scopus*

*Course/Module Coordinator: Dr. Tal Shany-Ur*

*Coordinator Email: shany-ur.tal@mail.huji.ac.il*

*Coordinator Office Hours: Tuesdays and Thursdays*

*Teaching Staff:*
*Dr. Tal Shany-Ur*

*Course/Module description:*
*The course will focus on the cognitive and behavioral presentation and neuropsychological characteristics of neurodegenerative diseases, as opposed to healthy brain aging. Assessment and intervention approaches will be discussed using clinical examples.*

*Course/Module aims:*
*- To become familiar with the effect of healthy aging on cognition, emotion and behavior.*
*- To become familiar with the effect of neurodegenerative diseases on cognition and socio-emotional behavior.*
*- To become familiar with neuropsychological characteristics of patients with different diseases, as well as main assessment methods and differential diagnosis principals.*
*- To become familiar with risk factors and neuroprotective factors in this domain, as well as with treatment and intervention approaches.*

*Learning outcomes - On successful completion of this module, students should be able to:*
*- Understand the relationship between age- and disease- related brain changes and cognitive and behavioral changes.*
*- Recognize the main neurodegenerative disorders based on their cognitive and behavioral characteristics, and to be able distinguish individuals with these disorders from individuals undergoing healthy aging.*
*- Be familiar with the diagnostic criteria for various neurodegenerative disorders.*
*- Be familiar with assessment and intervention approaches.*

*Attendance requirements(%):*
*80%*

*Teaching arrangement and method of instruction: Lectures, literature discussions, case presentations*

*Course/Module Content:*
*1. Brain changes across the life span, and factors affecting brain development and*

*aging*
*2. Structural, white matter, and functional connectivity changes in healthy brain aging, and their effect on cognition and behavior.*
*3. Social, emotional, personality and mood changes in healthy brain aging*
*4. From normal aging to MCI (mild cognitive impairment)*
*5. Cognitive and behavioral characteristics of Alzheimer's disease*
*6. Cognitive and behavioral characteristics of frontotemporal lobar degeneration*
*7. Cognitive and behavioral characteristics of Primary Progressive Aphasia variants*
*8. Cognitive and behavioral characteristics of primarily motor diseases (PD, PSP, ALS, HD)*
*9. Neuropsychological assessment in neurodegenerative diseases: case examples and differential diagnosis*
*10. Prevention, treatment and intervention approaches, cognitive reserve and neuroplasticity*

*Required Reading:*
** May be updated throughout the course **
*Kramer, J. H., Mungas, D., Reed, B. R., Wetzel, M. E., Burnett, M. M., Miller, B. L., ... & Chui, H. C. (2007). Longitudinal MRI and cognitive change in healthy elderly. Neuropsychology, 21(4), 412-418.*

*Gazzaley, A., & D'Esposito, M. (2007). Top-down modulation and normal aging. Annals of the New York Academy of Sciences, 1097(1) , 67-83 .*

*Kerchner, G. A., Racine, C. A., Hale, S., Wilheim, R., Laluz, V., Miller, B. L., & Kramer, J. H. (2012). Cognitive Processing Speed in Older Adults: Relationship with White Matter Integrity. PLoS ONE, 7(11), e50425.*

*Charles, S. T., & Piazza, J. R. (2007). Memories of social interactions: age differences in emotional intensity. Psychology and aging, 22(2), 300-309.*

*Weintraub, S., Wicklund, A. H., & Salmon, D. P. (2012). The Neuropsychological Profile of Alzheimer Disease. Cold Spring Harbor Perspectives in Medicine, 2(4), a006171.*

*Rascovsky, K., Hodges, J. R., Knopman, D., Mendez, M. F., Kramer, J. H., Neuhaus, J., ... Miller, B. L. (2011). Sensitivity of revised diagnostic criteria for the behavioural variant of frontotemporal dementia. Brain, 134(9), 2456–2477.*

*Gorno-Tempini, M. L., Hillis, A. E., Weintraub, S., Kertesz, A., Mendez, M., Cappa, S. F., ... Grossman, M. (2011). Classification of primary progressive aphasia and its variants. Neurology, 76(11), 1006–1014.*

*Kramer, J. H., Jurik, J., Sha, S. J., Rankin, K. P., Rosen, H. J., Johnson, J. K., & Miller, B.*

*L. (2003). Distinctive neuropsychological patterns in frontotemporal dementia, semantic dementia, and alzheimer disease. Cognitive and Behavioral Neurology, 16(4), 211-218.*

*Possin, K. L. (2010). Visual Spatial Cognition in Neurodegenerative Disease. Neurocase, 16(6), 466–487.*

*Shany-Ur, T. & Rankin, K.P. (2011). Personality and social cognition in neurodegenerative disease. Current Opinion in Neurology, 24(6), 550-555.*

*Middleton, L. E., & Yaffe, K. (2009). Promising strategies for the prevention of dementia. Archives of Neurology, 66(10), 1210-1215.*

*O'Shea, D. M., Fieo, R. A., Hamilton, J. L., Zahodne, L. B., Manly, J. J., & Stern, Y. (2015). Examining the association between late-life depressive symptoms, cognitive function, and brain volumes in the context of cognitive reserve. International journal of geriatric psychiatry, 30(6), 614-622*

*Additional Reading Material:*

*Seeley, W. W., Crawford, R. K., Zhou, J., Miller, B. L., & Greicius, M. D. (2009). Neurodegenerative diseases target large-scale human brain networks. Neuron,62(1), 42–52. http://doi.org.ucsf.idm.oclc.org/10.1016/j.neuron.2009.03.024*

*Sun, F. W., Stepanovic, M. R., Andreano, J., Barrett, L. F., Touroutoglou, A., & Dickerson, B. C. (2016). Youthful Brains in Older Adults: Preserved Neuroanatomy in the Default Mode and Salience Networks Contributes to Youthful Memory in Superaging. The Journal of Neuroscience, 36(37), 9659-9668*

*Hedman, A. M., van Haren, N. E., Schnack, H. G., Kahn, R. S., Pol, H., & Hilleke, E. (2012). Human brain changes across the life span: a review of 56 longitudinal magnetic resonance imaging studies. Human brain mapping,33(8), 1987-2002.*

*Sturm, V. E., Yokoyama, J. S., Seeley, W. W., Kramer, J. H., Miller, B. L., & Rankin, K. P. (2013). Heightened emotional contagion in mild cognitive impairment and Alzheimer's disease is associated with temporal lobe degeneration. Proceedings of the National Academy of Sciences of the United States of America, 110(24), 9944–9949. http://doi.org/10.1073/pnas.1301119110*

*Mather, M., & Carstensen, L. L. (2005). Aging and motivated cognition: The positivity effect in attention and memory. Trends in cognitive sciences, 9(10), 496-502.*

*Luong, G., Charles, S. T., & Fingerman, K. L. (2011). Better with Age: Social Relationships Across Adulthood. Journal of Social and Personal Relationships,28(1), 9–23.*

*Scarmeas, N., & Stern, Y. (2003). Cognitive reserve and lifestyle. Journal of clinical and experimental neuropsychology, 25(5), 625-633.*

*Snowdon, D. A. (2003). Healthy aging and dementia: findings from the Nun Study.*

*Annals of internal medicine, 139(5), 450-454.*

*Course/Module evaluation:*
*End of year written/oral examination 0 %*
*Presentation 0 %*
*Participation in Tutorials 10 %*
*Project work 75 %*
*Assignments 15 %*
*Reports 0 %*
*Research project 0 %*
*Quizzes 0 %*
*Other 0 %*

*Additional information:*