SYLLABUS – A COURSE DESCRIPTION

I. General information

1. Course name: Introduction to Bilingual Brain
2. Course code: ITBILB
3. Course type (compulsory or optional): compulsory
4. Study programme name: English Linguistics: Theories, Interfaces, Technologies
5. Cycle of studies (1st or 2nd cycle of studies or full master's programme): II cycle of studies
6. Educational profile (general academic profile or practical profile): general academic profile
7. Year of studies (if relevant): 2 MA
8. Type of classes and number of contact hours (e.g. lectures: 15 hours; practical classes: 30 hours): 30 hours
9. Number of ECTS credits: 4
10. Name, surname, academic degree/title of the course lecturer/other teaching staff: Katarzyna Bromberek-Dyzman, prof UAM
11. Language of classes: English
12. Online learning – yes (partly – online / fully – online) / no: no

II. Detailed information

1. Course aim (aims):

    A1: Transfer of knowledge about the brain's anatomy, structures, functions, and mechanisms underlying the acquisition, representation, development and understanding of the first and second language in bilinguals.

    A2: Transfer of knowledge about the structural and functional similarities and differences of bilingual brains with relation to factors (e.g. age of second language acquisition, level of proficiency, second language acquisition modality) that affect the density of gray matter structures and the quality of white matter pathways in bilingual brains.

    A3: Transfer of knowledge on the dynamics of neuro-plasticity in bilingual brains, and neuro-cognitive aspects of the "foreign language effect" – recent neuroimaging research.

    A4: Develop the questioning skills and hypotheses building on the functioning of the brains of bilinguals.

    A5: Develop the ability to wholistically understand and critically interpret the results of neuroimaging studies on the cortical and subcortical structures involved in language processing in bilinguals.

    2. Pre-requisites in terms of knowledge, skills and social competences (if relevant): basic, high school knowledge of biology and physiology of the nervous system introduced; familiarity with the content of the introduction to neuro-linguistics course (III BA); knowledge of English at the B2 level

    3. Course learning outcomes (EU) in terms of knowledge, skills and social competences and their reference to study programme learning outcomes (EK):

Course learning outcome symbol (EU)	On successful completion of this course, a student will be able to:	Reference to study programme learning outcomes (EK)
ITBILB_01	know the anatomy, structures and functions of the brain in relation to perception, representation, understanding of language, and biological and physiological processes and mechanisms related to language processing in bilinguals	KW_06, KW_01
ITBILB_02	know the structural and functional similarities and differences of bilingual brains, taking into account factors (e.g., second language acquisition age, proficiency level, second language acquisition modality) that affect the density of grey matter structures and the quality of white matter pathways in bilingual brains	KW_06, KW_01
ITBILB-03	know the dynamics of neuroplastic processes underpinning qualitative changes in bilingual brains; understand the 'foreign language effect' as represented in recent neuro-science research	KW_06, KW_01, KW_05
ITBILB_04	pose appropriate questions and build research hypotheses,	K_U06, K_UO09, K_UO10

	critically interpret and formulate conclusions related to the study of linguistic processes in the brains of bilinguals	
ITBILB_05	wholistically understand, and critically interpret the results of neuroimaging studies showing the cortical and subcortical structures involved in the processing of the first and second language in the bilingual brains	KW_06, K_U06, K_UO09, K_UO10

4. Learning content with reference to course learning outcomes (EU)

Course learning content:	Course learning outcome symbol (EU)
An introduction to the anatomy of the bilingual brain	ITBILB_01-05
Anatomy and physiology of the central nervous system	ITBILB_01-05
Chemistry and Electricity - Brain Languages	ITBILB_01-05
Cortical and subcortical centers involved in language processing - universal and L1, L2 specific	ITBILB_01-05
Cyto-architectural organization of the neocortex	ITBILB_01-05
Similarities and differences in the structure of grey and white matter in the Universal Language network of bilingual people	ITBILB_01-05
Factors influencing differences in gray matter density and white matter pathway networks in bilingual brains	ITBILB_01-05
Neuro-plasticity of brain structures in bilingual people	ITBILB_01-05
Hebb's cell assembly theory: second language acquisition and synaptic pruning	ITBILB_01-05
The degree of embodiment (embodiment) of the second language - a review of neuroimaging research	ITBILB_01-05
The Foreign Language Effect: a neurological research perspective	ITBILB_01-05

5. Reading list:

Buchweitz, A. and Prat, C. (2013). The bilingual brain: Flexibility and control in the human cortex. Physics of Life Reviews, http://dx.doi.org/10.1016/j.plrev.2013.07.020

Costa, A. (2020). The Bilingual Brain. And What It Tells Us about the Science of Language. Penguin Books Ltd.

Costa, A. and Sebastián-Gallés, N. (2014). How does the bilingual experience sculpt the brain? Nature Reviews, 15,337.

Kemmerer, D. (2015). Cognitive Neuroscience of Language. New York: Psychology Press.

Kissler, J.& Bromberek-Dyzman, K. (2021). Mood induction differently affects early neural correlates of evaluative word processing in L1 and L2. Frontiers in Psychology, 588902.

Martens, M., Celikel,T., & Tiesinga, P. (2015). A Developmental Switch for Hebbian Plasticity. PLoS Comput Biol 11(7): e1004386. doi:10.1371/journal.pcbi.1004386

Mechelli, A., Crinion, J.,Noppeney, U.,O'Doherty, J.,Ashburner, J., Frackowiak, R. & Price, C. (2004). Structural plasticity in the bilingual brain. Proficiency in a second language and age at acquisition affect grey-matter density. Nature, 431:14.

Pliatsikas, C. (2020). Understanding structural plasticity in the bilingual brain: The Dynamic Restructuring Model. Bilingualism: Language and Cognition, 1–13. https://doi.org/10.1017/S1366728919000130

Ward, J. (2015) The Students' Guide to Cognitive Neuroscience. New York: Psychology Press.

Wong, B., Yin, B., & O'Brien, B. (2016). Neurolinguistics: Structure, Function, and Connectivity in the Bilingual Brain. BioMed Research International, Article ID 7069274. http://dx.doi.org/10.1155/2016/7069274

III. Additional information

1. Teaching and learning methods and activities to enable students to achieve the intended course learning outcomes (please indicate the appropriate methods and activities with a tick and/or suggest different methods)

Teaching and learning methods and activities	X
Lecture with a multimedia presentation	X
Interactive lecture	X
Problem – based lecture	
Discussions	X
Text-based work	X
Case study work	
Problem-based learning	
Educational simulation/game	
Task – solving learning (eg. calculation, artistic, practical tasks)	
Experiential work	
Laboratory work	
Scientific inquiry method	
Workshop method	
Project work	
Demonstration and observation	
Sound and/or video demonstration	X
Creative methods (eg. brainstorming, SWOT analysis, decision tree method, snowball technique, concept maps)	
Group work	X
Other (please specify) -	
…	

2. Assessment methods to test if learning outcomes have been achieved (please indicate with a tick the appropriate methods for each LO and/or suggest different methods)

Assessment methods	Course learning outcome symbol					
	ITBILB_01	ITBILB_02	ITBILB_03	ITBILB_04	ITBILB_05	
Written exam	X	X	X			
Oral exam				X	X	
Open book exam						
Written test						
Oral test						
Multiple choice test						
Project						
Essay						
Report						
Individual presentation	X	X	X	X	X	
Practical exam (performance observation)						
Portfolio						
Other (please specify) – written feedback on each class content	X	X	X	X	X	
…						

3. Student workload and ECTS credits

Activity types		Mean number of hours spent on each activity type
Contact hours with the teacher as specified in the study programme		30
Independent study*	Preparation for classes	15
	Reading for classes	15
	Essay / report / presentation / demonstration preparation, etc.	10
	Project preparation	
	Term paper preparation	
	Exam preparation	30
	Other (please specify) -	
	…	
Total hours		100
Total ECTS credits for the course		4

* please indicate the appropriate activity types and/or suggest different activities

4. Assessment criteria in accordance with AMU in Poznan's grading system:

very good (very good; 5.0): the student has a very good command of neuro-cognitive terminology; knows and understands the processes and mechanisms related to the anatomy, structure and physiology of first and second language processing; is able to efficiently point to the similarities and differences in the density of the gray matter and white matter connectivity in the universal language network of bilingual people, and knows and understands the factors influencing the neuro-plastic differences between the first and second language of a bilingual individual; interprets the results of bilingual brain research; draws correct conclusions from the neuro-linguistic research.

good plus (+ db; 4.5): the student has a very good command of neuro-cognitive terminology; knows and understands the processes and mechanisms related to the anatomy, structure and physiology of the first and second language processing; is able to efficiently point to the similarities and differences in the structure of the gray matter density and white matter connectivity in the universal language network of bilingual people; knows and understands factors influencing the neuro-plastic differences in the bilingual brain; interprets the results of bilingual brain research; draws correct conclusions from the neuro-linguistic research, but makes minor mistakes.

good (db; 4.0): the student has a good command of neuro-cognitive terminology; knows and understands the processes and mechanisms related to the anatomy, structure and physiology of the first and second language processing; efficiently points to the similarities and differences in the structure of the gray matter density and white connectivity in the universal language network of bilingual people; knows and understands the factors influencing the neuro-plastic differences in gray matter density in bilingual brains; interprets well the results of bilingual brain research; draws conclusions from neuro-linguistic research, but makes occasional mistakes.

satisfactory plus (+ dst; 3.5): the student has a fairly good command of neuro-cognitive terminology; knows and understands the processes and mechanisms related to the anatomy, structure and physiology of first and second language processing; is able to satisfactorily identify the similarities and differences in the structure of the gray and the white matter in the universal language network of bilingual people;

sufficiently understands the factors influencing the neuro-plastic differences in the gray matter density and the quality of white matter pathways in the brains of bilingual people; interprets the results of research on the subject matter quite well, and basically draws correct conclusions from the neuro-linguistic research, but makes mistakes.

satisfactory (dst; 3.0): the student has some basic knowledge of the neuro-cognitive terminology; understands the basic processes and mechanisms related to the anatomy, structure and physiology of the first and second language processing; is able to point out some similarities and differences in the structure of gray and white matter in the universal language network of bilingual people; knows some factors influencing the neuro-plastic differences in gray matter density and white matter connectivity in the bilingual brain; makes significant errors in the interpretation of neuro-linguistic research.

unsatisfactory (ndst; 2.0): the student does not know neuro-cognitive terminology; does not understand the processes and mechanisms related to the anatomy, structure and physiology of the processing of the first and second language; is unable to identify the similarities and differences in the structure of gray and white matter in the universal network of the language of bilingual people; does not know nor understand the factors influencing the neuro-plastic differences in gray matter density and the white matter connectivity in the bilingual brain; makes glaring errors in the interpretation of neuro-linguistic research.