SYLLABUS – A COURSE DESCRIPTION

I. General information

1. Course name: Conversational AI in Healthcare
2. Course code:
3. Course type (compulsory or optional): **compulsory**
4. Study programme name: **Language and Communication in Healthcare**
5. Cycle of studies (1st or 2nd cycle of studies or full master's programme): **2nd cycle – MA studies**
6. Educational profile (general academic profile or practical profile): **general academic**
7. Year of studies (if relevant): **2MA**
8. Type of classes and number of contact hours (e.g. lectures: 15 hours; practical classes: 30 hours):
   practical classes: 15 hours (seminaria)
9. Number of ECTS credits: **2**
10. Name, surname, academic degree/title of the course lecturer/other teaching staff:
    Magdalena Aniol, MSc
11. Language of classes: **English**
12. Online learning – yes (partly – online / fully – online) / no: **partly online**

II. Detailed information

1. Course aim (aims):
- Introduce students to the field of voice interfaces in general, and their application in healthcare in particular.
- Teach students the workflow and principles of voice interface design.
- Empower students to implement their own solution with the objective to apply the knowledge about the communication in healthcare acquired in other ComHealth courses.

2. Pre-requisites in terms of knowledge, skills and social competences (if relevant):
English at 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)
EU_01	understand what conversational AI is and its impact on communication in healthcare	K_W13
EU_02	translate communication needs in a healthcare scenario to a specification for a conversational agent	K_W07, K_W11, K_W14, K_W12
EU_03	design dialog models for a conversational agent in healthcare scenario	K_W05, K_U01, K_U13
EU_04	implement a conversational agent solution using a Dialogflow/Rasa/Clinc platform [platformTBD]	K_W13
EU_05	evaluate a conversational agent solution in a healthcare scenario	K_W08, K_W09, K_K08, K_K07, K_U09
EU_06	pitch their course project	K_U05, K_U04, K_U06, K_U014

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

Course learning content:	Course learning outcome symbol (EU)
Conversational AI in Healthcare: overview of the field	EU_01
Case Study1: Conversational AI in patient treatment	EU_02
CaseStudy 2: Conversational AI in communication training	EU_02
Conversational AI under the hood (the components of a solution)	EU_04, EU_01
Voice interface design principles	EU_02, EU_03
Voice interface implementation	EU_04
Evaluation, privacy, ethical considerations	EU_05
Demo Day	EU_06

5. Reading list [WIP]:
- Speech and Language Processing. Daniel Jurafsky & James H. Martin
- Designing Voice User Interfaces: Principles of Conversational Experiences. Cathy Pearl.
- Voice Technology in Healthcare. Leveraging Voice to Enhance Patient and Provider Experiences. David Metcalf, Teri Fisher, Sandhya Pruthi, Harry P. Pappas
- Using artificial intelligence to analyse and teach communication in healthcare. Phyllis Butow, Ehsan Hoque. *The Breast,* Volume 50, 2020. Pages 49-55.
- Key Considerations for Incorporating Conversational AI in Psychotherapy. Miner Adam S., Shah Nigam, Bullock Kim D., Arnow Bruce A., Bailenson Jeremy, Hancock Jeff. *Frontiers in Psychiatry*, Volume 10, 2019. Pages 746.
- Conversational agents in healthcare: a systematic review. Liliana Laranjo, Adam G Dunn, Huong Ly Tong, Ahmet Baki Kocaballi, Jessica Chen, Rabia Bashir, Didi Surian, Blanca Gallego, Farah Magrabi, Annie Y S Lau, Enrico Coiera, *Journal of the American Medical Informatics Association*, Volume 25, Issue 9, September 2018, Pages 1248–1258
  - …

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	X
Problem-based learning	X
Educational simulation/game	
Task – solving learning (eg. calculation, artistic, practical tasks)	X

Experiential work	
Laboratory work	
Scientific inquiry method	
Workshop method	
Project work	X
Demonstration and observation	
Sound and/or video demonstration	
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					
Written exam						
Oral exam						
Open book exam						
Written test						
Oral test						
Multiple choice test						
Project	EU_02	EU_03	EU_04			
Essay						
Report	EU_01	EU_05				
Individual presentation	EU_06					
Practical exam (performance observation)						
Portfolio						
Other (please specify) -						
…						

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		15
Independent study *	Preparation for classes	5
	Reading for classes	10
	Essay / report / presentation / demonstration preparation, etc.	15
	Project preparation	15
	Term paper preparation	
	Exam preparation	
	Other (please specify) -	
	…	
Total hours		60
Total ECTS credits for the course		2

* 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 (bdb; 5,0):
• Student shows a full understanding the communication problem to be tackled by the solution.
• Student implements a working solution which demonstrates the application of knowledge about the communication specific to selected healthcare context.
• Student defends their design choices with reference to sources.
• Student can critically evaluate the solution.
• Student shows awareness of the ethical concerns involved in the solution.
• Student can pitch their solution with clear messages in academic English.
• Student submits a well developed project report within academic English standard

Good plus (+db; 4,5):
• Student shows a full understanding the communication problem to be tackled by the solution.
• Student implements a working solution which demonstrates the application of knowledge about the communication specific to selected healthcare context. There can be minor imperfections in the implementation of the solution.
• Student defends their design choices with reference sources.
• Student can critically evaluate the solution.
• Students shows awareness of the ethical concerns involved in the solution.
• Students can pitch their solution with clear understandable messages and good English with minor imperfections.
• Students submits a well developed report within academic English standards. Minor imperfections permitted.

Good (db; 4,0):

- Student shows somewhat incomplete understanding the communication problem to be tackled by the solution.
- Student implements a working solution which demonstrates the application of knowledge about the communication specific to selected healthcare context. There can be imperfections in the implementation of the solution.
- Student defends their design choices with reference to the sources. Some arguments might not be 100% correct.
- Student can critically evaluate the solution.
- Students shows awareness of the ethical concerns involved in the solution.
- Students can pitch their solution with understandable messages and good English with imperfections.
- Students submits a well developed report within academic English standards. Some imperfections permitted.

Satisfactory plus (+dst; 3,5):

- Student shows partial understanding the communication problem to be tackled by the solution.
- Student implements a working solution which demonstrates the application of knowledge about the communication specific to selected healthcare context but not 100% successfully. There can be some issues in the implementation of the solution.
- Student defends their design choices with reference to the sources. Some arguments might not be 100% correct.
- Student can critically evaluate the solution, but the evaluation will be missing important criteria.
- Student shows awareness of the ethical concerns involved in the solution.
- Student can pitch their solution with understandable messages and good English with some errors.
- Student submits a well developed report within academic English standards. Some errors permitted. The structure of the report will be deficient.

Satisfactory (dst; 3,0):

- Student shows partial understanding the communication problem to be tackled by the solution.
- Student implements a working solution which demonstrates the application of knowledge about the communication specific to selected healthcare context but not convincingly or to a limited extend. There can be some issues in the implementation of the solution.
- Student defends their design choices with reference to the sources. Some arguments might be flawed.
- Student can barely evaluate the solution and the evaluation will be missing important criteria.
- Students shows awareness of the ethical concerns involved in the solution.
- Student can pitch their solution with understandable messages and good English with some errors.
- Students submits a well developed report within academic English standards. Some errors permitted. The structure of the report will be deficient.

Unsatisfactory (ndst; 2,0):

- Student shows no understanding the communication problem to be tackled by the solution.
- Student implements a working solution which does not demonstrates the application of knowledge about the communication specific to selected healthcare context. There can be some issues in the implementation of the solution or student does not submit a working solution at all.
- Student fails to defend their design choices with reference to the sources.
- Student cannot evaluate the solution.
- Student shows no awareness of the ethical concerns involved in the solution.
- Student fails to successfully communicate their pitch or does not pitch at all.
- Student submits a report that does not meet academic English standards or student does not submit the report at all.