



University of Tehran
School of Electrical and Computer Engineering

Course:	8101573 – Natural Language Processing											
Course type:	EE*						CE*				Credit: 3	
		Com	E	P	B	Con	D	SW	HW	IT		MI
	Required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Elective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Level:	Undergraduate <input type="checkbox"/> Graduate <input checked="" type="checkbox"/>											
Co-requisite(s):	None.											
Prerequisite(s):	None.											
Prerequisite by topic:	None.											
Textbook(s):	[1] Jurafsky, Daniel, and James H. Martin. 2009. <i>Speech and Language Processing: An Introduction to Natural Language Processing, Speech Recognition, and Computational Linguistics</i> . 2nd edition. Prentice-Hall.											
Coordinator:	Dr. Faili, Associate Professor, School of ECE.											
Goals:	The goal of this course is acquaintance of the students with concepts of natural language in computer. Indeed, the goal is that, we are able to develop systems such that to communicate humans with natural languages, e.g. Persian or English. This course covers two different branches; first, primary processing related to natural language, e.g. scripts or accurate analysis of context, and second, practical software related to natural language.											
Outcome:	Upon successful completion of the course, students will be able: <ul style="list-style-type: none"> 1. To understand problems of working on natural language; 2. To learn different levels of analysis of natural language; 3. To learn primary processing of natural language; 4. To learn practical software related to natural language. 											
Topics:	<ul style="list-style-type: none"> 1. Primary concepts of natural language; 2. Regular Expression; 3. Morphology Analysis; 4. Spell Checker; 5. N-gram and Language Model; 6. Part of Speech Tagging; 											

	<p>7. Hidden Markov Model/Maximum Entropy Hidden Markov model;</p> <p>8. Context Free Grammar;</p> <p>9. Natural Language Syntactic Parser;</p> <p>10. Statistical Syntactic Parser;</p> <p>11. Semantic and Language;</p> <p>12. Summarization and Question Answering System;</p> <p>13. Machine Translation;</p> <p>14. Introduction to Deep Learning in Natural Language Processing;</p>
Computer usage:	Two Computer Assignments, coded by Python or Perl.
Assignments:	One homework per each topic.
Projects:	Final Project.
Grading:	<p>Assignments: 15%</p> <p>Projects: 10%</p> <p>Midterm exams: 35%</p> <p>Final exam: 40%</p>
Further readings:	None.
Prepared by:	Dr. Hesham Faili.
Date:	September, 21, 2017.

*EE: Electrical Engineering		CE: Computer Engineering	
Com	Communications	SW	Software
E	Electronics	HW	Hardware
P	Power	IT	Information Technology
B	Bioelectronics	MI	Machine Intelligence and Robotics
Con	Control		
D	Digital System		