MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

COURSE PLAN

Department	:	Computer Science and Engineering
Course Name & code	:	Natural Language Processing & CSE 4011
Semester & branch	:	VII & CSE
Name of the faculty	:	Muralikrishna S N

	L	T	P	C
No of contact hours/week:	3	0	0	3

ASSESSMENT PLAN

Course Outcomes (COs)

	At the end of this course, the student should be able to:	No. of Contact Hours	Marks
CO1:	Describe the basic concepts of Natural Language Processing and English morphology using Finite State Machines	6	17
CO2:	Apply the Probabilistic Models, N-Grams and Edit distance in Natural Langauge Processing applications.	12	33
CO3:	Outline different linguistic resources and informations of word classes, tagsets, grammar rules used in Natural Language Processing applications for English Language	6	17
CO4:	Compare the different types of parsers in analyzing English sentence structure	8	22
CO5:	Describe the importance of Natural Language Procesing in different applications	4	11

MIT/GEN/F-01/R1

			Total	36	100

Components	Quizzes	Sessional Tests	End Semester/ Make-up Examination
Duration	20 to 30 minutes	60 minutes	180 minutes
Weightage	20 % (4 X 5 marks)	30 % (2 X 15 Marks)	50 % (1 X 50 Marks)
Typology of Questions	Understanding/ Comprehension; Application; Analysis; Synthesis; Evaluation	Knowledge/ Recall; Understanding/ Comprehension; Application	Understanding/ Comprehension; Application; Analysis; Synthesis; Evaluation
Pattern	Answer one randomly selected question from the problem sheet (Students can refer their class notes)	MCQ: 10 questions (0.5 marks) Short Answers: 5 questions (2 marks)	Answer all 5 full questions of 10 marks each. Each question may have 2 to 3 parts of 3/4/5/6/7 marks
Schedule	4, 7, 10, and 13th week of academic calendar	Calendared activity	Calendared activity
Topics Covered	Quiz 1 (L 1-9 & T $_{y1-y2}$) **(CO1 & CO2)** Quiz 2 (L **10-17** & T $_{y3-y4}$) **(CO2)** Quiz 3 (L 18-24 & T $_{y5-y6}$) **(CO2 &CO3)** Quiz 4 (L 25-32 & T $_{y7-y8}$) **(CO4)**	Test 1 (L 1-13 & T $_{b1-b2}$) **(CO1& CO2)** Test 2 (L 14-28 & T $_{b3-b4}$) **(CO2, CO3 & CO4)**	Comprehensive examination covering full syllabus. Students are expected to answer all questions **(CO1-5)**

Course Plan

L. No./ T. No.	Topics	Course Outcome Addressed
L0	Introduction to Natural Language Processing	CO
L1	Knowledge in Speech and Language processing, Ambiguity	CO1
L2	Models and Algorithms	CO1
L3	Survey of English Morphology	CO1
L4	Finite state Morphological processing, Building a Finite-State Lexicon	CO1
L5	Finite-State Transducers(FST), FST for morphological processing,	CO1
L6	Lexicon-Free FSTs, The Porter-Stemmer Algorithms	CO1
L7	Detecting and Correcting Spelling Errors, Minimum Edit Distance	CO2
L8	Counting words in corpora	CO2
L9	Simple (Unsmoothed) N-Grams, Tranining and Test Data	CO2

MIT/GEN/F-01/R1

L10	Smoothing N-Grams	CO2
L11	Training and Test data and Evaluating N-Grams:Perplexity	CO2
L12	Interpolation	CO2
L13	Back-off, Information Theory Background	CO2
L14	English word classes	CO3
L15	Tagset for English, Part-of-Speech (POS) tagging	CO3
L16	Rule-based POS tagging	CO2
L17	HMM- POS tagging	CO2
L18	Transformation based POS tagging	CO2
L19	Evaluation and Error analysis	CO2
L20	The Noisy Channel Model for Spelling	CO2
L21	Formal grammars for English: Constituency,	CO3
L22	Some grammar rules for English	CO3
L23	Treebanks	CO3
L24	Dependency Grammar	CO3
L25	Parsing as Search: Top down parsing	CO4
L26	Bottom-up parsing	CO4
L27	Ambiguity	CO4
L28	Dynamic Programming Parsing Methods: CKY Parsing	CO4
L29	The Earley algorithm	CO4
L30	Chart parsing	CO4
L31	Probabilistic Context-Free grammars	CO4
L32	Evaluating Parsers	CO4
L33	Applications of NLP: Information Extraction,	CO5
L34	Question Answering and Summarization	CO5
L35	Classsical Machine Translation (MT) and The Vauquois Triangle	CO5
L36	Statistical MT and Conlusion	CO5

MIT/GEN/F-01/R1

References:

1. Daniel Jurafsky & James H. Martin, Speech and Language Processing, Second Edition, 2000

2. Akshar Bharati, Rajeev Sangal and Vineet Chaitanya, Natural Language Processing: A Paninian Perspective on , Prentice-Hall of India, New Delhi, 1995.

3. Steven Bird, Ewan Klein, Edward Loper, Natural Language Processing with Python – Analysing Text with natural language toolkit , O'Reilly Media, 2009

4. Chris Manning, Hinrich Schutze , Foundations of Statistical Natural Language Processing, MIT Press, Cambridge, 1999

5. Click or tap here to enter text.

6. Click or tap here to enter text.

7. Click or tap here to enter text.

Submitted by: Muralikrishna SN

(Signature of the faculty)

Date: 26-07-2018

Approved by: Dr Ashalatha Nayak

(Signature of HOD)

Date: 28-07-2018

FACULTY MEMBERS TEACHING THE COURSE (IF MULTIPLE SECTIONS EXIST):

FACULTY	SECTION	FACULTY	SECTION
Dr Ashalatha Nayak	E		
Mr Muralikrishna SN	F		

MIT/GEN/F-01/R1