

**MA Computational Linguistics – Semester III - Course Descriptions (1 August – 14 December 2024)**

Course Title	<b>Linguistic Phonetics</b>
Category (Mention the appropriate category (a/b/c) in the course description)	Existing course without changes
Course Code	<b>MACLINGE 611</b>
Semester	Semester III
No. of Credits	4
Maximum intake	30
Day/ Time	Wednesday : 3.00 – 5.00 pm Friday: 11.00 am – 1.00 pm
Name of the teacher/s	Dr. Dominic Savio, Prof. S. Jayaraju, Prof. Komali Prakash
Course Description:	<p><b>A brief overview of the course</b></p> <p>The course ‘Linguistic Phonetics’ is an advanced level course which deals with the theoretical and practical aspects of three domains of Phonetics: articulation, IPA and acoustics. As part of the articulatory module, various speech mechanisms such as initiation, phonation, and articulation involved in the production of speech sounds, not just of English but also of other languages of the world are dealt with. IPA (International Phonetic Alphabet) is introduced and is backed by practice sessions in production, perception, and transcription of speech sounds. Similarly, theoretical inputs in acoustic phonetics are followed by hands on practical sessions in PRAAT (a speech analysis software), to enable learners get a grip on the acoustic analysis of speech. This skill is essential for students aiming to do research in the field of phonetics.</p> <p>Pre-requisite: MALINGC 511 - Phonetics and Spoken English</p> <p><b>References</b></p> <ol style="list-style-type: none"><li>1. Catford, J.C. (1977). Fundamental Problems in Phonetics. Edinburgh: Edinburgh University Press.</li><li>2. Denes, P. and Pinson, E.N. (1993). The Speech Chain, 2<sup>nd</sup> ed. Oxford: W. H. Freeman and Company.</li><li>3. Fry, D.B. (1979). The Physics of Speech. Cambridge: Cambridge University Press.</li><li>4. Ladefoged, P. (1996). Elements of Acoustic Phonetics, 2<sup>nd</sup></li></ol>

ed.Chicago: University of Chicago Press.

5. Ladefoged, P. and Johnson, K. (2001). A Course in Phonetics, 6<sup>th</sup> ed. Wadsworth: Cengage Learning.

(i) Objectives of the course in terms of Programme Specific Outcomes (PSO of the Programme under which the

CO1	Gain an in-depth understanding of the theoretical underpinnings of the three domains of phonetics: Articulation, IPA and Acoustics	PO1, PO2, PO3	Domain Specific s
CO2	Grasp the various articulatory mechanisms such as initiation, phonation and articulation involved in the production of speech	PO1, PO2, PO3	Domain Specific
CO3	Identify, produce, perceive and transcribe all the sounds of IPA	PO9, P10	Application of knowledge and skills
CO4	Comprehend the physics behind the transmission of speech sounds and acoustically analyse speech	PO1, PO2 PO9, P10	Domain Specific Application of knowledge and skillss
CO5	Efficiently use speech analysis tools such as PRAAT, CSL, Mingogram, etc.	PO7, P10	Skill Enhancement s Application of knowledge and skills
CO6	Apply the theoretical knowledge and analytical skills gained to describe and document Indian languages including lesser studied and endangered languages	PO13 PO14	Generic Learning

course is being offered)

On completion of the course, the students will

Course Delivery

Lecture

Evaluation Scheme	<ul style="list-style-type: none"> <li>• Internal Assessment: 40 % (3 internal tests of 20 marks each)</li> <li>• Final Assessment: 60 %</li> </ul>
Reading List	<ol style="list-style-type: none"> <li>1. Catford, J.C. (1977). <b>Fundamental Problems in Phonetics</b>. Edinburgh: Edinburgh University Press.</li> <li>2. Denes, P. and Pinson, E.N. (1993). <b>The Speech Chain</b>, 2<sup>nd</sup> ed. Oxford: W. H. Freeman and Company.</li> <li>3. Fry, D.B. (1979). <b>The Physics of Speech</b>. Cambridge: Cambridge University Press.</li> <li>4. Ladefoged, P. (1996). <b>Elements of Acoustic Phonetics</b>, 2<sup>nd</sup> ed. Chicago: University of Chicago Press.</li> <li>5. Ladefoged, P. and Johnson, K. (2001). <b>A Course in Phonetics</b>, 6<sup>th</sup> ed. Wadsworth: Cengage Learning.</li> <li>6. International Phonetic Association. (1999). <b>Handbook of the International Phonetic Association</b>: a guide to the use of the International Phonetic Alphabet. Cambridge: CUP.</li> </ol> <p>(Supplementary reading will be given as and when needed)</p>

Course Title	<b>MACLINGC 671</b>
Category (Mention the appropriate category (a/b/c) in the course description)	Existing course without changes
Course Code	<b>An Introduction to Mathematical Linguistics</b>
Semester	Semester III
No. of Credits	4
Maximum intake	30
Day/ Time	Tuesday & Thursday: 4.00 – 6.00 pm
Name of the teacher/s	Dr. Utpal Lahiri
Course Description:	<p>Set theory, Propositional logic, Relations and Functions, Predicate Calculus, Modal Logic, Algebraic Structures (Orders, lattices, Boolean Algebras).</p> <p>Textbook: Partee, B., R. Wall and A. Ter Meulen (1990). Mathematical Methods in Linguistics. Springer.</p>
Course Delivery	Lecture
Evaluation Scheme	Internals (40%), Final (60%)
Reading List	

Course title	<b>An Introduction to Language Acquisition</b>																										
Category (Mention the appropriate category (a/b/c) in the course description.)	Existing course without changes																										
Course code	<b>MACLINGE 691</b>																										
Semester	Three (Semester III)																										
Number of credits	4 credits																										
Maximum intake	30 intake <b>Prerequisite for the course</b> MALINGC 541: Syntax 1 MALINGC 531: Basic Issues in Morphology																										
Day/Time	Monday and Wednesday 11:00 to 1:00																										
Name of the teacher/s	Prof. Shruti Sircar																										
Course description	<p>(i) A brief introduction to the Course</p> <p>Language Acquisition is an introductory course designed to enable students to acquire an understanding of the process of language acquisition, including how children learn words, learn sounds and learn how to construct grammatically correct sentences. It provides students with the basic skills for carrying out child language acquisition research. Issues covered include collecting, describing and interpreting children's data and reporting research findings. Students will be given an opportunity to analyze some data from a child who is in the process of learning language.</p> <p>(ii) Objectives of the course in terms of Programme Specific Outcomes (PSO of the Programme under which the course is being offered)</p> <p>On completion of the course, the students will</p> <table border="1"> <tr> <td><b>CO1</b></td> <td>gain detailed knowledge of child language development</td> <td>PO1</td> <td>domain specific</td> </tr> <tr> <td><b>CO2</b></td> <td>learn about various language acquisition theories and theoretical debates in language acquisition research</td> <td>PO1</td> <td>domain specific</td> </tr> <tr> <td><b>CO3</b></td> <td>learn about the basic experimental procedures used to test children's linguistic knowledge</td> <td>PO2</td> <td>skill enhancement</td> </tr> <tr> <td><b>CO4</b></td> <td>learn how to collect samples of child language from different languages and different age groups</td> <td>PO5, PO7</td> <td>skill enhancement</td> </tr> <tr> <td><b>CO5</b></td> <td>develop skills for analyzing children's spontaneous and elicited language production</td> <td>PO6, PO7</td> <td>skill enhancement</td> </tr> <tr> <td><b>CO6</b></td> <td>apply knowledge of the features of child language to analyze children's language samples</td> <td>PO6</td> <td>domain specific</td> </tr> </table>			<b>CO1</b>	gain detailed knowledge of child language development	PO1	domain specific	<b>CO2</b>	learn about various language acquisition theories and theoretical debates in language acquisition research	PO1	domain specific	<b>CO3</b>	learn about the basic experimental procedures used to test children's linguistic knowledge	PO2	skill enhancement	<b>CO4</b>	learn how to collect samples of child language from different languages and different age groups	PO5, PO7	skill enhancement	<b>CO5</b>	develop skills for analyzing children's spontaneous and elicited language production	PO6, PO7	skill enhancement	<b>CO6</b>	apply knowledge of the features of child language to analyze children's language samples	PO6	domain specific
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	<b>CO7</b>	apply child language data to explain linguistic theorization	PO9, PO10	domain specific
	<b>CO8</b>	apply concepts learnt to understand language in children with disabilities and disorders	PO10, PO11,	value added
Course delivery	Lecture 60% Data analysis 40%			
Evaluation scheme	Internal (modes of evaluation): 3 sit down tests (best 2) – 40% End-semester (mode of evaluation): 1 sit down examination 60% (open book)			
Reading list	<p><b>Essential reading:</b>  Maria Teresa Guasti (2003). <i>Language Acquisition: The Growth of Grammar</i>. MIT Press.</p> <p><b>Additional reading</b></p> <ol style="list-style-type: none"> <li>1. O'Grady (2005). <i>How Children Learn Language</i>. Cambridge University Press.</li> <li>2. Barbara C Lust (2006). <i>Child Language</i>. Cambridge University Press.</li> <li>3. Erika Hoff (2013). <i>Language Development</i>. Cengage Books.</li> <li>4. Eve Clark (2016). <i>First Language Acquisition</i>. Cambridge University Press.</li> </ol>			

Course Title	<b>Introduction to Machine Learning</b>
Category (Mention the appropriate category (a/b/c) in the course description)	c. New course
Course Code	MACLINGE683
Semester	III
No. of Credits	4
Maximum intake	20
Day/ Time	Wednesday and Friday 10 a.m. - 11 a.m. (From 1 November 2024)
Name of the teacher/s	Prof. M. Hari Prasad
Course Description:	<p>This course aims to introduce students to the core concepts of machine learning in a simple and accessible manner. Students will learn the basics of machine learning, focusing on practical applications and real-world scenarios.</p> <p>On completion of the course, the students will :</p> <p>CO1 - have a good understanding of the fundamental issues and challenges of machine learning: data, model selection, model complexity, etc.</p> <p>CO2 - have an understanding of the strengths and weaknesses of many popular machine learning approaches.</p> <p>CO3 - appreciate the underlying mathematical relationships within and across Machine Learning algorithms and the paradigms of supervised and un-supervised learning.</p> <p>CO1 - be able to design and implement various machine learning algorithms in a range of real-world applications.</p>
Course Delivery	<p>The students who register for this course will be required to do an 8-week course called "A basic course in Machine Learning for all", offered by Dr. Sumitra Padmanabhan on SWAYAM platform from 15 July 2024 till 31 October 2024. Since the SWAYAM course is a non-credit course, students will not receive any credits from SWAYAM for doing the course. The tutor will conduct internal tests and will supplement the course with more reading material and a project work, which can allow the students earn 4 credits. The project work will be evaluated for final grading.</p>

Evaluation Scheme	Internals - quizzes and tests - 40% Final - project work - 60%
Reading List	""Machine Learning For Dummies"" by John Paul Mueller and Luca Massaron  ""The Hundred-Page Machine Learning Book"" by Andriy Burkov"



Course Title	<b>Introduction to Head-driven Phrase Structure Grammar</b>
Category (Mention the appropriate category (a/b/c) in the course description)	a. No changes
Course Code	MACLINGE689
Semester	III
No. of Credits	4
Maximum intake	20
Day/ Time	Wednesday and Friday - 3 p.m. to 5 p.m.
Name of the teacher/s	Prof. M. Hari Prasad
Course Description:	<p>This course aims to introduce students to the Head-driven Phrase Structure Grammar and show the viability of using HPSG for computational purposes.</p> <p>On completion of the course, the students will :</p> <p>CO1 - talk about the conceptual background of Head-driven Phrase Structure Grammar</p> <p>CO2 - Be able to write lexical entries using the AVMS</p> <p>CO3 - analyse sentences of English using the principles of HPSG</p> <p>CO4 - explain the ungrammaticality of sentences of English using the principles and rules of HPSG</p> <p>CO5 - apply the principles and rules of HPSG to analyse sentences from Indian languages</p>
Course Delivery	Lectures - 60% Data analysis -40%
Evaluation Scheme	Internals - quizzes and tests - 40% Semester-end Examination - 60%
Reading List	<p>Ivan A. Sag Thomas Wasow Emily M. Bender. 2003. <b>Syntactic Theory: A Formal Introduction</b> Müller, Stefan, Anne Abeillé, Robert D. Borsley &amp; Jean-Pierre Koenig (eds.). 2021. <b>Head-Driven Phrase Structure Grammar: The handbook</b></p>

Course title	<b>Research Methodology</b>
Category (Mention the appropriate category (a/b/c) in the course description.)	Existing course without changes
Course code	<b>MACLINGRMC 698</b>
Semester	Three (Semester III)
Number of credits	4 credits
Maximum intake	30 intake
Day/Time	Tuesday: 2.00 – 4.00 pm Friday: 2.00 – 3.00 pm
Name of the teacher/s	Prof. Roopa Suzana, Dr. Utpal Lahiri, Dr, Neelam Singh
Course description	<p><b>Introduction</b></p> <p>The Research Methodology course in linguistics aims to teach students the fundamental techniques and approaches used in linguistic research. It focuses on developing skills to design studies, collect and analyse data, and draw valid conclusions. Overall, the course aims to empower students with the tools and knowledge necessary to conduct rigorous and meaningful research in the field of linguistics.</p> <p>This course has three modules.</p> <p><b>Module1: Types of Research and Research Design</b></p> <p>This module is designed to enhance students' ability to critically evaluate existing linguistic research, identify gaps in the literature and contribute to the ongoing discourse in the field. It further equips learners with the skills to identify research problems, formulate research questions, build hypotheses, and state objectives clearly. In addition, it also develops skills to build an appropriate research design based on the nature of enquiry.</p> <p><b>Module 2: Data Collection Techniques</b></p> <p>This module on field methods in linguistics typically involves collecting and documenting linguistic data. It introduces learners to various methods of gathering linguistic data, such as designing questionnaires and tests, interviews, surveys, experiments, audio recordings, and corpus analysis. It also equips learners with the knowledge of using appropriate techniques and tools necessary to conduct effective and rigorous linguistic fieldwork. Emphasis is also laid on the importance of involving and collaborating with language speakers and communities throughout the research process. In addition, it also addresses the ethical issues related to linguistic research, such as consent, privacy, and cultural sensitivity.</p> <p><b>Module 3: Data Analysis and interpretation and Academic Writing</b></p> <p>This module focuses on training learners how to analyse and interpret linguistic data. It introduces students to the various instrumental techniques used in the analysis of linguistic/Phonetic data. Students will have hands-on</p>

	<p>experience in designing and conducting small-scale research projects, collecting linguistic data, analysing results, and drawing valid conclusions. Students will also learn about data analysis and experiments in syntax and semantics.</p> <p>This module also focuses on equipping learners with the required technical writing skills to present the literature review, description of the methodology used for the research experiment. It trains learners on how to paraphrase, use appropriate methods of in-text citation and referencing using APA style. It also draws their attention to the issue of plagiarism.</p>
Course delivery	Lecture
Evaluation scheme	<p>Internal: 40% (Assignments/ Presentations)</p> <p>External: 60% (Term Paper)</p>
Reading list	<p>Bowern, C. 2015. <i>Linguistic fieldwork: A practical guide</i>. Springer.</p> <p>Chelliah, S. L., &amp; De Reuse, W. J. 2010. <i>Handbook of descriptive linguistic fieldwork</i>. Springer Science &amp; Business Media.</p> <p>De Laine, M. 2000. "Fieldwork, participation and practice: Ethics and dilemmas in qualitative research". <i>Fieldwork, Participation and Practice</i>, 1-240.</p> <p>Lee-Treweek, G., &amp; Linkogle, S. (Eds.). 2000. <i>Danger in the field: Risk and ethics in social research</i>. Psychology Press.</p> <p>Newman, P., &amp; Ratliff, M. (Eds.). 2001. <i>Linguistic fieldwork</i>. Cambridge University Press.</p> <p>Butcher, A. 2013. <i>Research Methods in Phonetic Fieldwork</i>. Bloomsbury Publishing.</p> <p>Staley, Kent W. 2014. <i>An Introduction to the Philosophy of Science</i>. Cambridge University Press.</p> <p>Sprouse, Jon. 2023. <i>The Oxford Handbook of Experimental Syntax</i>. Oxford University Press.</p> <p>Goodall, Grant. 2021. <i>The Cambridge Handbook of Experimental Syntax</i>. Cambridge University Press.</p> <p>Ball, Derek and Brian Rabern. 2018. <i>The Science of Meaning</i>. Oxford University Press.</p>

Course Title	<b>INTRODUCTION TO TAGGING AND PARSING</b>
Category (Mention the appropriate category (a/b/c) in the course description)	c)
Course Code	<b>MACLINGC 677</b>
Semester	Fourth
No. of Credits	4
Maximum intake	30
Day/ Time	11am-1pm Tuesdays and Thursdays
Name of the teacher/s	Dr. Atreyee Sharma
Course Description:	<p>In the first part students are exposed to the first layer of Tagging and Parsing namely, Morphological Analyzer, Parts of Speech Tagging, Named Entity and Named Entity Recognition. Students read and research on different tag sets, models, challenges and issues regarding Morphological Analyzer, POS Tagging and NER wrt Indian languages. In this course, they will be exposed to Local Word Grouping, Chunking, Parsing and Tree Banks. Shallow parsing or chunking or light <a href="#">parsing</a>) will be taught in terms of analysis of a <a href="#">sentence</a> which first identifies constituent parts of sentences (nouns, verbs, adjectives, etc.) and then links them to higher order units that have discrete grammatical meanings (<a href="#">noun</a> groups or <a href="#">phrases</a>, verb groups, etc.). The term Parsing has slightly different meanings in different branches of <a href="#">linguistics</a> and <a href="#">computerscience</a>.</p> <p>Traditional <a href="#">sentence</a> parsing is often a method of understanding the exact meaning of a sentence or word, sometimes with the aid of devices such as <a href="#">sentence diagrams</a>. Students will be introduced to the concepts of LWG, Chunking and Parsing and work out real world data to understand the terms and their significance in the world of NLP.</p> <p><b>CO1</b> To understand and analyze the grammatical structure of a sentence and to disambiguate words that have multiple meanings.</p> <p><b>CO2</b> To understand the design and nature of various tag sets available for PoS Tagging.</p> <p><b>CO3</b> To analyze and understand automatic text processing tools to consider which part of speech each word is.</p> <p><b>CO4</b> To have hands on experience in manual tagging and map it to statistical tagging methods.</p> <p><b>CO5</b> To make students understand the structure of sentences of their mother tongue and have them apply the PoS tagging methods in texts from their MT.</p>

Course Delivery	Lectures
Evaluation Scheme	Mid-term evaluation: 40% (Assignments, quizzes, presentations and tests) End term examination: 60% (Assignments and Written examination)
Reading List	<p>Readings will be suggested and changed as according to the topic.</p> <p>ESSENTIAL READING: Akshar Bharathi and Prashanth R. Mannem (2007), "Introduction to the Shallow Parsing Contest for South Asian Languages", Language Technologies Research Center, International Institute of Information Technology, Hyderabad, India 500032.</p> <p>A. Ratnaparakhi. 1996. A Maximum Entropy Part Of-Speech Tagger. EMNLP 1996</p> <p>A. Bharati, V. Chaitanya, R. Sangal 1995. Natural Language Processing : A Paninian Perspective . Prentice Hall India.</p> <p>A Part of Speech Tagger for Indian Languages (POS tagger), Tagset developed at IIIT - Hyderabad after consultations with several institutions through two workshops, 2007. <a href="http://shiva.iiit.ac.in/SPSAL2007/iiit_tagset_guidelines.pdf">shiva.iiit.ac.in/SPSAL2007/iiit_tagset_guidelines.pdf</a></p> <p>Kulkarni, A., Shukla, D.: Sanskrit morphological analyzer: some issues. In: Festschrift, B.K. (ed.) Volume by LSI (2009)</p> <p>Antony, P.J., Soman, K.P.: Computational morphology and natural language parsing for Indian languages: a literature survey. Int. J. Comput. Sci. Eng. Technol. 136–146 (2012)</p> <p>ADDITIONAL READING: Sparck Jones, K. and Galliers, J. R. (1995). Evaluating Natural Language Processing Systems. Springer Verlag, Heidelberg, Germany.</p> <p>Abney, S. P., Schapire, R. E., and Singer, Y. (1999). Boosting applied to tagging and PP attachment. In EMNLP/VLC-99, 38–45</p> <p>Kupiec, J. (1992). Robust part-of-speech tagging using a hidden Markov model. Computer Speech and Language, 6, 225–242.</p> <p>Nivre, J., de Marneffe, M.-C., Ginter, F., Goldberg, Y., Hajic, J., Manning, C. D., McDonald, R., Petrov, S., Pyysalo, S., Silveira, N., Tsarfaty, R., and Zeman, D. (2016). Universal Dependencies v1: A multilingual treebank collection. In LREC.</p> <p>G. Leech, R. Garside and M. Bryant. 1992. Automatic POS-Tagging of the corpus. BNC2 POS tagging Manual.</p> <p>P. R. Ray , V. Harish, A. Basu and S. Sarkar 2003. Part of Speech Tagging and Local Word Grouping Techniques for Natural Language Parsing in Hindi. In Proceedings of ICON 2003</p>