Course title	**Introduction to Machine Learning**
Category (Mention the appropriate category (a/b/c) in the course description.)	Existing course without changes
Course code	**MACLINGE 683**
Semester	III
Number of credits	4
Maximum intake	30
Day/Time	Monday & Wednesday: 2.00 pm – 4.00 pm
Name of the teacher/s	Dr. Iram Ali Ahmad
Course description	This course offers a foundational and practical exploration of machine learning by emphasizing the interplay between core algorithms, implementation tools and real-world systems. Students will study key machine learning paradigms including supervised, unsupervised and reinforcement learning. The students will also engage with the mathematical principles that underlie model design and evaluation. Hands-on lab sessions and assignments will provide experience with widely used frameworks such as Scikit-learn and Tensor Flow. The course also introduces modern machine learning infrastructures, including data pipelines, model deployment and MLOps (Machine Learning Operations).
Course delivery	Theoretical and Hands-on Practice
Evaluation scheme	Written Tests, Quizzes, Submissions
Reading list	**Core Textbooks:** 1. Géron, A. (2022). *Hands-on machine learning with Scikit-Learn, Keras, and TensorFlow: Concepts, tools, and techniques to build intelligent systems* (3rd ed.). O'Reilly Media. 2. Bishop, C. M. (2006). *Pattern recognition and machine learning*. Springer. 3. Murphy, K. P. (2012). *Machine learning: A probabilistic perspective*. MIT Press. 4. Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep learning*. MIT Press.

	Supplementary Papers and Articles: 8.Huyen, C. (2022). *Designing machine learning systems: An iterative process for production-ready applications*. O'Reilly Media. 9.Hastie, T., Tibshirani, R., & Friedman, J. (2009). *The elements of statistical learning: Data mining, inference, and prediction* (2nd ed.). Springer. 10. Ng, A. (2018). *Machine learning yearning: Technical strategy for AI engineers, in the era of deep learning*. deeplearning.ai. [Available online: https://www.deeplearning.ai/machine-learning-yearning/] 11.Google Cloud. (2020). *MLOps: Continuous delivery and automation pipelines in machine learning* (Whitepaper).

Course title	**Fundamentals of Information Retrieval and Information Extraction**
Category (Mention the appropriate category (a/b/c) in the course description.)	New course
Course code	**MACLINGE 685**
Semester	III
Number of credits	4
Maximum intake	30
Day/Time	Monday & Wednesday: 9.00 -11.00 am
Name of the teacher/s	Dr. Iram Ali Ahmad
Course description	This course introduces the foundational principles and advanced techniques of **Information Extraction (IE)** and **Information Retrieval (IR)which are** two critical components of modern Natural Language Processing (NLP). Students will explore how structured information can be extracted from unstructured and semi-structured dataand how relevant information can be retrieved efficiently from large corpora and the web.The course blends traditional symbolic and statistical approaches with recent deep learning-based methods. It combines theoretical grounding with practical skills through hands-on assignments and projects involving tools such as spaCy, NLTK and Hugging Face Transformers.
Course delivery	Theoretical and Hands-on Practice
Evaluation scheme	Written Tests, Quizzes, Submissions
Reading list	**Core Textbooks:** 5. Manning, C. D., Raghavan, P., & Schütze, H. (2008). *Introduction to information retrieval*. Cambridge University Press. https://nlp.stanford.edu/IR-book/ 6. Jurafsky, D., & Martin, J. H. (2023). *Speech and language processing* (3rd ed., draft). Pearson. https://web.stanford.edu/~jurafsky/slp3/

7. Cowie, J., & Lehnert, W. (1996). Information extraction. *Communications of the ACM, 39*(1), 80–91. https://doi.org/10.1145/234173.234209

Supplementary Papers and Articles:

4. Lin, J., & Zhang, Y. (2021). *An introduction to neural information retrieval*. Foundations and Trends® in Information Retrieval, 15(4), 287–388. https://doi.org/10.1561/1500000071
5. Devlin, J., Chang, M. W., Lee, K., & Toutanova, K. (2019). BERT: Pre-training of deep bidirectional transformers for language understanding. In *Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies* (pp. 4171–4186). https://doi.org/10.48550/arXiv.1810.04805
6. Gupta, S., & Manning, C. D. (2020). ISABELA: Neural information extraction for question answering. In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP)* (pp. 3916–3929). https://doi.org/10.18653/v1/2020.emnlp-main.321
7. Chinchor, N. (1998). Overview of MUC-7/MET-2. *Message Understanding Conference (MUC-7) Evaluation Reports.* https://catalog.ldc.upenn.edu/docs/LDC2001T02/MUC7/MUC-7-MET-2_Overview.html
8. Callan, J. (2005). Personal information agents: Definition and implementation. In *Proceedings of the 28th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval* (pp. 1–2). https://doi.org/10.1145/1076034.1076036

Course Title	**Linguistic Phonetics**
Category (Mention the appropriate category (a/b/c) in the course description	Existing course without changes
Course Code	**MACLINGE 611**
Semester	III
No. of Credits	4
Maximum intake	30
Day/ Time	Monday: 9.00 am – 11.00 am Friday: 11.00 – 1.00 pm
Name of the teacher/s	Prof. S. Jayaraju (Acoustics & IPA) Dr. Didla Grace (Articulatory)
Course Description:	**A brief overview of the course** 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. Pre-requisite: MALINGC 511 - Phonetics ands Spoken English **References** 1. Catford, J.C. (1977).Fundamental Problems in Phonetics. Edinburgh: Edinburgh University Press. 2. Denes, P. and Pinson,E.N.(1993). The Speech Chain, 2nd ed.Oxford: W. H. Freeman and Company. 3. Fry, D.B. (1979). The Physics of Speech. Cambridge: Cambridge University Press. 4. Ladefoged, P. (1996). Elements of Acoustic Phonetics, 2nd ed.Chicago: University of Chicago Press.

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

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

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

On completion of the course, the students will

Course Delivery	Lecture

Evaluation Scheme	• Internal Assessment: 40 % (3 internal tests of 20 marks each) • Final Assessment: 60 %
Reading List	1. Catford, J.C. (1977). **Fundamental Problems in Phonetics**. Edinburgh: Edinburgh University Press. 2. Denes, P. and Pinson, E.N. (1993). **The Speech Chain**, 2nd ed.Oxford: W. H. Freeman and Company. 3. Fry, D.B. (1979). **The Physics of Speech**. Cambridge: Cambridge University Press. 4. Ladefoged, P. (1996). **Elements of Acoustic Phonetics**, 2nd ed.Chicago: University of Chicago Press. 5. Ladefoged, P. and Johnson, K. (2001). **A Course in Phonetics**, 6th ed. Wadsworth: Cengage Learning. 6. International Phonetic Association. (1999). **Handbook of the International Phonetic Association**: a guide to the use of the International Phonetic Alphabet. Cambridge: CUP. (Supplementary reading will be given as and when needed)

Course Title	**Introduction To Tagging And Parsing**
Category (Mention the appropriate category (a/b/c) in the course description	c)
Course Code	**MACLINGC 677**
Semester	III
No. of Credits	4
Maximum intake	30
Day/ Time	Tuesday & Thursday: 2.00 pm – 4.00 pm
Name of the teacher/s	Dr. Atreyee Sharma
Course Description:	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 parsing) will be taught in terms of analysis of a sentence which first identifies constituent parts of sentences (nouns, verbs, adjectives, etc.) and then links them to higher order units that have discrete grammatical meanings (noun groups or phrases, verb groups, etc.). The term Parsing has slightly different meaningsin different branches of linguistics and computerscience. Traditional sentence parsing is often a method of understanding the exact meaning of a sentence or word, sometimes with the aid of devices such as sentence diagrams. 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. **CO1** To understand and analyze the grammatical structure of a sentence and to disambiguate words that have multiple meanings**.** **CO2** To understand the design and nature of various tag sets available for PoS Tagging**.** **CO3** To analyze and understand automatic text processing tools to consider which part of speech each word is. **CO4** To have hands on experience in manual tagging and map it to statistical tagging methods. **CO5** 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**.**
Course Delivery	Lectures
Evaluation Scheme	Mid-term evaluation: 40% (Assignments, quizzes, presentations and tests)

	End term examination: 60% (Assignments and Written examination)
Reading List	Readings will be suggested and changed as according to the topic. 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. A. Ratnaparakhi. 1996. A Maximum Entropy Part Of-Speech Tagger. EMNLP 1996 A. Bharati, V. Chaitanya, R. Sangal 1995. Natural Language Processing : A Paninian Perspective . Prentice Hall India. A Part of Speech Tagger for Indian Languages (POS tagger), Tagset developed at IIIT - Hyderabad after consultations with several institutions through two workshops, 2007. shiva.iiit.ac.in/SPSAL2007/iiit_tagset_guidelines.pdf Kulkarni, A., Shukla, D.: Sanskrit morphological analyzer: some issues. In: Festschrift, B.K. (ed.) Volume by LSI (2009) Antony, P.J., Soman, K.P.: Computational morphology and natural language pars ing for Indian languages: a literature survey. Int. J. Comput. Sci. Eng. Technol. 136–146 (2012) ADDITIONAL READING: Sparck Jones, K. and Galliers, J. R. (1995). Evaluating Natural Language Processing Systems. Springer Verlag, Heidelberg, Germany. Abney, S. P., Schapire, R. E., and Singer, Y. (1999). Boosting applied to tagging and PP attachment. In EMNLP/VLC-99, 38–45 Kupiec, J. (1992). Robust part-of-speech tagging using a hidden Markov model. Computer Speech and Language, 6, 225–242. Nivre, J., de Marneffe, M.-C., Ginter, F., Goldberg, Y., Hajic,ˇ 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. G. Leech, R. Garside and M. Bryant. 1992. Auto matic POS-Tagging of the corpus. BNC2 POS tagging Manual. P. R. Ray , V. Harish, A. Basu and S. Sarkar 2003. Part of Speech Tagging and Local Word Group ing Techniques for Natural Language Parsing in Hindi. In Proceedings of ICON 2003

Course Title	**Introduction to Head-driven Phrase Structure Grammar**
Category (Mention the appropriate category (a/b/c) in the course description	a. No changes
Course Code	MACLINGE 689
Semester	III
No. of Credits	4
Maximum intake	30
Day/ Time	Tuesday & Thursday: 11.00 am – 1.00 pm
Name of the teacher/s	Prof. M. Hari Prasad
Course Description:	This course aims to introduce students to the Head-driven Phrase Structure Grammar and show the viability of using HPSG for computational purposes. On completion of the course, the students will : CO1 - talk about the conceptual background of Head-driven Phrase Structure Grammar CO2 - Be able to write lexical entries using the AVMs CO3 - analyse sentences of English using the principles of HPSG CO4 - explain the ungrammaticality of sentences of English using the principles and rules of HPSG CO5 - apply the principles and rules of HPSG to analyse sentences from Indian languages
Course Delivery	Lectures - 60% Data analysis -40%
Evaluation Scheme	Internals - quizzes and tests - 40% Semester-endExamination - 60%
Reading List	Ivan A. Sag Thomas Wasow Emily M. Bender. 2003.**Syntactic Theory:A Formal Introduction** Müller, Stefan, Anne Abeillé, Robert D. Borsley& Jean-Pierre Koenig (eds.).2021. **Head-Driven Phrase Structure Grammar: The handbook**

Course title	**Introduction to Language Acquisition**
Category (Mention the appropriate category (a/b/c) in the course description.)	Existing course without changes
Course code	**MACLINGE 691**
Semester	III
Number of credits	4 credits
Maximum intake	30 intake **Prerequisite for the course** MALINGC 541: Syntax 1 MALINGC 531: Basic Issues in Morphology
Day/Time	Monday: 11.00 am – 1.00 pm Thursday: 2.00 pm – 4.00 pm
Name of the teacher/s	Prof. Shruti Sircar
Course description	(i) A brief introduction to the Course 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. (ii) Objectives of the course in terms of Programme Specific Outcomes (PSO of the Programme under which the course is being offered) On completion of the course, the students will

	CO1	gain detailed knowledge of child language development	PO1	domain specific
	CO2	learn about various language acquisition theories and theoretical debates in language acquisition research	PO1	domain specific
	CO3	learn about the basic experimental procedures used to test children's linguistic knowledge	PO2	skill enhancement
	CO4	learn how to collect samples of child language from different languages and different age groups	PO5, PO7	skill enhancement
	CO5	develop skills for analyzing children's spontaneous and elicited language production	PO6, PO7	skill enhancement
	CO6	apply knowledge of the features of child language to analyze children's language samples	PO6	domain specific
	CO7	apply child language data to explain linguistic theorization	PO9, PO10	domain specific
	CO8	apply concepts learnt to understand language in children with disabilities and disorders	PO10, PO11,	value added
Course delivery	Lecture60% 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	**Essential reading:** Maria Teresa Guasti (2003). *Language Acquisition: The Growth of Grammar*. MIT Press**.** **Additional reading** 1. O'Grady (2005). *How Children Learn Language*. Cambridge University Press. 2. Barbara C Lust (2006). Child Language. Cambridge University Press. 3. Erika Hoff (2013). *Language Development. Cengage Books.* 4. Eve Clark (2016). *First Language Acquisition.* Cambridge University Press.			

Course title	**Research Methodology**
Category (Mention the appropriate category (a/b/c) in the course description.)	Existing course without changes
Course code	**MACLINGRMC 698**
Semester	III
Number of credits	4 credits
Maximum intake	30 intake
Day/Time	Wednesday: 4.00 pm – 6.00 pm Friday: 9.00 am – 11.00 am
Name of the teacher/s	Dr. Utpal Lahiri, Dr. Didla, Grace Suneetha Dr. Meena Debashish, Dr. Neelam Singh
Course description	**Introduction** 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. This course has three modules. **Module1: Types of Research and Research Design** 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 equipslearners with the skills to identify research problems, formulate research questions, build hypotheses, and state objectives clearly. In addition, it also developsskills to build an appropriate research design based on the nature of enquiry. **Module 2: Data Collection Techniques** 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 knowledgeof using appropriatetechniques 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. **Module 3: Data Analysis and interpretation and Academic Writing** This module focuses on training learners how to analyseand interpret linguistic data.It introduces students to the various instrumental techniques

	used in the analysis of linguistic/Phonetic data. Students will have hands-on 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. 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.
Course delivery	Lecture
Evaluation scheme	Internal: 40% (Assignments/ Presentations) External: 60% (Term Paper)
Reading list	Bowern, C. 2015. *Linguistic fieldwork: A practical guide*. Springer. Chelliah, S. L., & De Reuse, W. J. 2010. *Handbook of descriptive linguistic fieldwork*. Springer Science & Business Media. De Laine, M. 2000. "Fieldwork, participation and practice: Ethics and dilemmas in qualitative research". *Fieldwork, Participation and Practice*, 1-240. Lee-Treweek, G., &Linkogle, S. (Eds.). 2000. *Danger in the field: Risk and ethics in social research*. Psychology Press. Newman, P., & Ratliff, M. (Eds.). 2001. *Linguistic fieldwork*. Cambridge University Press. Butcher, A. 2013. *Research Methods in Phonetic Fieldwork*. Bloomsbury Publishing. Staley, Kent W. 2014. *An Introduction to the Philosophy of Science.* Cambridge University Press. Sprouse, Jon. 2023. *The Oxford Handbook of Experimental Syntax*. Oxford University Press. Goodall, Grant. 2021. *The Cambridge Handbook of Experimental Syntax*. Cambridge University Press. Ball, Derek and Brian Rabern. 2018. *The Science of Meaning*. Oxford University Press.

Course Title	**Advanced Topics in Semantics**
Category (Mention the appropriate category (a/b/c) in the course description	Existing course without changes
Course Code	**MACLINGCE - 651**
Semester	III
No. of Credits	4
Maximum intake	30
Day/ Time	Monday & Friday: 4.00 – 6.00 pm
Name of the teacher/s	Dr. Utpal Lahiri
Course Description:	This course is a continuation of Semantics I and is intended to give a basic introduction to advanced topics. Topics include: Logical Form and Quantifiers Generalized Quantifier Theory Lambda Calculus Adverbial Modification and Event Semantics; tense, aspect Anaphora and Indexicals.
Course Delivery	Lecture
Evaluation Scheme	Internals: 40 marks External: 60 marks
Reading List	Required text: Altshuler, D., T. Parsons and R. Schwarzschild (2018). *A Course in Semantics*. MIT Press. Recommended texts: Chierchia, G. and S. McConnell-Ginet (2000). *Meaning and Grammar*. MIT Press (2nd Edition) Heim, I. and von Fintel (2007). *Notes on Intensional Semantics*. Ms., MIT (downloadable)