



**Gokaraju Rangaraju Institute of Engineering and Technology
(Autonomous)**

Program Outcomes -Competencies – Performance Indicators

M.Tech - Data Science

PO1: An ability to independently carry out research/investigation and development work to solve practical problems.	
Competency	Indicators
1.1 Determine the competency to define a complex problem in Data Science domain.	1.1.1 Relate the acquired domain knowledge to a greater societal and professional concerns. 1.1.2 Demonstrate the ability to create a detailed problem statement, including objectives and scope. 1.1.3 Determine the ability to synthesis system needs by reviewing state-of-the-art literature. 1.1.4 Translate the knowledge to write software requirements specifications (SRS)
1.2 Demonstrate the ability to curate and interpret domain specific data.	1.2.1 Identify the process of collecting different kinds of data, demonstrate the ability to select appropriate data storage and management techniques. 1.2.2 Apply the knowledge of Linear algebra, Statistical and Numerical techniques to interpret the data for diverse domains of Data Science.
1.3 Demonstrate an ability to select optimized design/model for further development	1.3.1 Determine Competency to generate a multitude of possible solutions that are functionally appropriate. 1.3.2 Demonstrate the ability to evaluate multiple solutions in a methodical way. 1.3.3 Select optimal design solution for further development after consulting with domain experts and stakeholders.
PO2: An ability to write and present a substantial technical report/document.	
Competency	Indicators
2.1 Demonstrate a working knowledge of technical literature and the ability to keep track of project operations.	2.1.1 Technical and non-technical information must be read, understood, and interpreted. 2.1.2 Produce written materials that are clear, well-structured, and well-supported. 2.1.3 Create a logical progression of ideas in a document or presentation.
2.2 Improve listening, speaking,	2.2.1 Listen to and understand information, directions, and other

and presentation skills.	people's points of view. 2.2.2 Deliver effective oral presentations to technical and non-technical people.
2.3 Determine the ability to combine various communication modes.	2.3.1 Supplement writing and presentations with graphs and reports. 2.3.2 Use a range of media to effectively convey the message in a document or a presentation.
PO3: Able to demonstrate a degree of mastery over the area as per the specialization of the program.	
Competency	Indicators
3.1 Demonstrate competency in Data Science process	3.1.1 Identify the Processes and Techniques of Pre-processing, Visualization, Modelling, Evaluation, Interpretation and Optimization and apply to a given field of study. 3.1.2 Demonstrate the ability to Model the computational challenges through a systematic analysis.
3.2 Apply advanced Data Science techniques to model and solve computational problems.	3.2.1 Identify the optimized mathematical and engineering models for the field of study. 3.2.2 Develop the ability to select the qualified data in accordance with standards. 3.2.3 Demonstrate the ability to design Optimized solutions.
3.3 Demonstrate Data Science modeling in a specialized domain knowledge Programme.	3.3.1 Demonstrate the ability to identify the Algorithms or Methodologies applicable for a specific domain of study. 3.3.2 Demonstrate the ability to use knowledge-based systems (Ontologies) to solve domain specific Data Science problems.
PO4: An ability to apply the knowledge of Computing tools and techniques in the field of Data Science.	
Competency	Indicators
4.1 Demonstrate the ability to explore techniques, approaches & resources that are specific to a particular domain.	4.1.1 Demonstrate the ability to identify domain-specific tools and techniques. 4.1.2 Identify the limitations of a resource/tool/technique and come up with an alternative solution
4.2 Demonstrate an ability to adapt/modify/create resources.	4.2.1 Recognize contemporary tools, strategies, and resources for Data science activities 4.2.2 Create/modify the resources, tools or techniques and demonstrate the ability to provide open-source solution.
4.3 Determine the impact of Application and Services on Social, Environment and in Economic perspectives.	4.3.1 Identify different informational needs (insights to prescriptive analytics) of Industries and Demonstrate the ability to provide workflows. 4.3.2 Demonstrate the ability to provide the sustainable, economical solutions in the interest of public.

	4.3.3 Recognize the relation between technical, socioeconomic, and environmental components for sustainability.
PO5: An ability to apply ethical principles and adhere to professional roles and responsibilities.	
Competency	Indicators
5.1 Demonstrate an ability to recognize ethical concerns.	5.1.1 identify the roles and responsibilities of the profession and demonstrate the required skills. 5.1.2 Identify circumstances where professional behavior is unethical and suggest ethical alternatives. 5.1.3 Recognize the unethical issues such as Discrimination, harassment etc.,
5.2 Demonstrate an ability to apply the ethics for Professional roles and responsibilities.	5.2.1 Examine and apply moral and ethical ideas to case studies that are well-known. 5.2.2 Ethics and morality are essential tools for the functioning of the Society.
PO 6: Recognize the need for and on ability to engage in lifelong learning in the context of Technological Change	
Competency	Indicators
6.1 Enable the ability to recognize knowledge gaps and come up with a plan to close problems.	6.1.1 Identify the requirements of continuous quality improvements in the emerging and evolving technologies. 6.1.2 Recognize the deficiencies in knowledge, demonstrate ability to close this gap.
6.2 Prove the ability to spot shifting trends in Data Science allied areas.	6.2.1 Recognize periods of rapid technical advancement in the world of information technology that necessitated practitioners seeking education to keep current. 6.2.2 Recognize the value of new advancements in data science field and be able to appropriately explain its importance.
6.3 Demonstrate the capacity to explore and access new information sources.	6.3.1 Obtain and grasp technical books and other reliable sources of data. 6.3.2 Analyze available technical and societal data for feasibility, sustainability, and long-term viability.