1) Obtain a fundamental understanding of the theory and practice of data representation, query languages, and their interactions. Provide exposure to leading data and query models, including the Relational Model, document and web search, and XML.

2) Provide students with practical experience with implementation of disk-oriented system internals, with a focus on the efficient management of disk and memory. Have the ability to benchmark these implementations and determine their efficacy.

3) Obtain a theoretical understanding of transactional consistency semantics, and detailed concurrency and recover protocols to implement these semantics.

4) Provide students with practical experience in the design and implementation of multi-tier data-intensive applications, integrating Internet-based interfaces, application services, and backend databases.