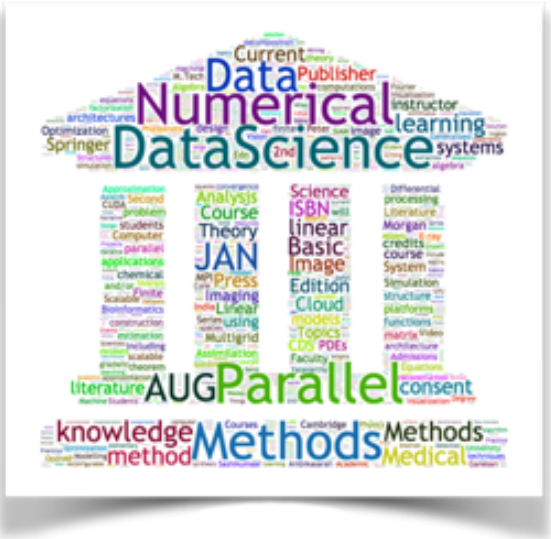
CDS

Department of Computational and Data Sciences

Department of Computational and Data Sciences

M.Tech. (Computational and Data Science)

Course Structure*



* Subjected to minor modifications as approved by DCC

M.Tech. (CDS) Course Structure

Department of Computational and Data Sciences

Duration: 24 Months (Aug 2017 – July 2019)

- Hard Core: 13 credits
  - Courses: 12 credits
  - Research Methods: 1 credit (soft skills course)
- Soft Core: 10 credits minimum *(atleast three courses)*
- Dissertation: 24 credits (from May 2018 – July 2019)
- Electives: Rest (64 – (13+sofcore three course credits + dissertation 24 credits)) credits

(Students may credit CDS electives/soft core or other department courses)

Total: 64 credits

M.Tech. (CDS) Course Structure

Department of Computational and Data Sciences

- Hard Core: 13 credits
  - Courses: 12 credits
    - DS 221 AUG 3:0 Introduction to Scalable Systems (VSS/YS/MJT)
    - DS 284 AUG 2:1 Numerical Linear Algebra (MV/SA)
    - DS 288 AUG 3:0 Numerical Methods (SG/PY)
    - DS 294 JAN 3:0 Data Analysis and Visualization (PY/AC)
  - Research Methods: 1 credit (soft skills course)

M.Tech. (CDS) Course Structure

- Soft Core: 10 credits minimum *(atleast three courses)*
  - DS 211 JAN 3:0 Numerical Optimization (SA/AM)
  - DS 222 AUG 3:1 Machine Learning with Large Datasets (PPT)
  - DS 256 JAN 3:1 Scalable Systems for Data Science (YS)
  - DS 289 JAN 3:1 Numerical Solution of Differential Equations (AM/SA)
  - DS 290 AUG 3:0 Modelling and Simulation (SR)
  - DS 295 JAN 3:1 Parallel Programming (SV)

M.Tech. (CDS) Course Structure

Department of Computational and Data Sciences

- Dissertation: 24 credits (from May 2018 – July 2019)
  - Important part of program
  - Close to 14 months
  - Mini Ph.D.
  - Comprehensive experience on applying computational and data sciences techniques

M.Tech. (CDS) Course Structure

- Electives: Rest (64 − (13+sofcore three course credits + dissertation 24 credits)) credits

(Students may credit CDS electives/soft core or other department courses)

CDS Electives:

DS 250 AUG 3:1 Multigrid Methods (SG)
DS 252 JAN 3:1 Cloud Computing (YS)
DS 255 JAN 3:1 System Virtualization (JL)
DS 260 JAN 3:0 Medical Imaging (PY)
DS 262 JAN 3:0 Applied and Computational Photonics (MV)
DS 263 AUG 3:1 Video Analytics (RVB)
DS 270 JAN 3:1 Constructive Approximation Theory for Computational Scientists (SA)
DS 291 JAN 3:1 Finite Elements: Theory and Algorithms (SG)
DS 293 AUG 3:1 Topics in Grid Computing (VSS)
DS 301 AUG 2:0 Bioinformatics (KS/DP)
DS 303 AUG 2:0 Chemoinformatics (DP)
DS 305 AUG 3:1 Topics in Web-scale Knowledge Harvesting (PPT)
DS 360 JAN 3:0 Topics in Medical Imaging (PY)
DS 391 JAN 3:0 Data Assimilation to Dynamical Systems (SR)
DS 397 JAN 2:1 Topics in Embedded Computing (SKN)

M.Tech. (CDS) Typical Course Plan

Department of Computational and Data Sciences

First Semester (Aug-Dec 2017)

- DS 221 AUG 3:0 Introduction to Scalable Systems (VSS/YS/MJT)
- DS 284 AUG 2:1 Numerical Linear Algebra (MV/SA)
- DS 288 AUG 3:0 Numerical Methods (SG/PY)
- Two elective courses
  - Ex:
    - » DS 263 AUG 3:1 Video Analytics (RVB)
    - » E0 225 AUG 3:1 Design and Analysis of Algorithms

Total Credits: 17 credits

M.Tech. (CDS) Typical Course Plan

Department of Computational and Data Sciences

Second Semester (Jan-Apr 2018)

- DS 294 JAN 3:0 Data Analysis and Visualization (PY/ AC)
- DS 200 JAN 0:1 Research Methods
- Soft Core Courses (minimum 2 courses)
  - Ex:
    - » DS 256 JAN 3:1 Scalable Systems for Data Science (YS)
    - » DS 295 JAN 3:1 Parallel Programming (SV)
- Minimum One elective/softcore course
  - Ex: DS 270 JAN 3:1 Constructive Approximation Theory for Computational Scientists

Total Credits: 16 credits

M.Tech. (CDS)
Typical Course Plan

Department of Computational and Data Sciences

- Dissertation: 24 credits (from May 2018 – July 2019)
- Third semester (Aug- Dec 2018)
  - Rest credits (soft core/electives) in terms of courses (7-8 credits)
    - Ex:
      - DS 222 AUG 3:1 Machine Learning with Large Datasets (PPT)
      - DS 290 AUG 3:0 Modelling and Simulation (SR)
- Fourth semester (Jan- Apr 2019)
  - Dissertation

Total: 64 credits

Thank You!

Department of Computational and Data Sciences