

Advanced Probabilistic Machine Learning and Applications: general information

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- **Logistics:**
 - **Website:** https://github.com/APMLA/apmla_material
 - **Plan 2019/20:** 14 Oct 2019 - 9 Feb 2020, 15 weeks, 4hr/week, 15 weeks, 60hr
 - **Lecture:** Tuesdays 14:15-16pm at TTR2 in Cyber Valley Campus
 - **Tutorial:** Wednesdays 16:15-18pm at TTR2 in Cyber Valley Campus
 - **Registration:** **NEED to register** the exam either via Campus / ALMA or written if the student cannot register online.
- **Grading:**
 - 70% written exam
 - 30% exercises from tutorials.
- **Feedback survey:** After every lecture, there will be a survey for the students to fill. The results will be summarized at the beginning of the next class.
- **Tentative program and schedule:**
 - **15 Oct** Introduction to probabilistic machine learning (both) → Tutorial: Written exercises
Reference: Chapter 2 up to Section 2.3.6 and Section 8.2 of [Bishop \(2006\)](#)
 - **22 Oct** Gaussian Mixture Model (GMM) + Expectation Maximization (Valera) → Tutorial: Coding exercise
Reference: Section 9.2 of [Bishop \(2006\)](#)
 - **29 Oct** DP- GMM + Gibbs Sampling (Valera) → Tutorial: Coding exercise
 - **5 Nov** Hidden Markov Models (HMMs) + Gibbs (Valera) → Tutorial: Coding exercise
 - **12th Nov** Temporal point Processes (TPPs) I (Valera) → Tutorial: Written exercises
 - **19th Nov** TPPs + Sequential Monte Carlo (Valera) → Tutorial: data science exercise
 - **26th Nov** Mean Field approach (De Bacco) → Tutorial: Written exercises
 - **3rd Dec** TAP (De Bacco) → Tutorial: Written exercises
 - **10th Dec** Review and Spin glass planted I (De Bacco) → Tutorial: Written exercises
 - **17th Dec** Spin glass planted (BP) (De Bacco) → Tutorial: data science
 - **7th Jan** MM-SBM + EM/BP (De Bacco) → Tutorial: data science
 - **14th Jan** GMMs + Variational Inference (VI) (De Bacco) → Tutorial: Coding exercise
 - **21st Jan** VI + LDA (De Bacco) → Tutorial: Data science
 - **28st Jan** Stochastic VI (Valera) → Tutorial: Coding exercise
 - **4th Feb** Variational Autoencoders (Valera) → Tutorial: Witten exercise

References

C. M. Bishop, *Pattern recognition and machine learning* (Springer, 2006).