Course offered for the PhD program
in Civil, Chemical and Environmental Engineering
Curriculum in Chemical, Material and Process Engineering –
a.a. 2019/2020 (cycles XXXV, XXXIV and XXXIII)

(possibility of participation for students in other PhD cycles or other PhD courses)

1. Title
Data-driven models and Machine Learning

2. Course Description
The course aims at providing notions to the future PhD students on the growing role of data-driven models and an introduction to Machine Learning concpets.
The course will include the following topics:
- Model Classification: first principle and empirical models, generalities and typical applications;
- Empirical models and their use: particularities and main algorithms;
- Development of data-driven model: implementation roadmap, rules-of-the-game and pitfalls;
- Data-driven model typical applications: industrial and environmental examples;
- A data-driven world: data key role in present reality. Data Analytics 4 Vs.
- Machine Learning: features and potentialities. Applications in industry and beyond

3. Course Organization
The course, organized into a single module, will consist of classroom lessons.

4. Teacher
The course teacher will be Dr. Nunzio Bonavita.

5. Duration and credits
The course (10 hours) will consist of 4 lessons, 2 or 3 hours each, for a total of 2 credits.

6. Activation mode and teaching period
The course will be held yearly if at least one student will be registered by simple contact with the teacher by email. The course will be held during the period April-May 2020. The exact dates of the lessons will be confirmed about one month before the beginning of the course.

7. Deadline for registration
Registration to the course must be made before February 20th, 2019. Students are requested to inform the teacher by e-mail (nunzio.bonavita@it.abb.com) about their registration.

8. Final exam
The final exam will consist in an interview on the topics covered by the course. The students are requested to contact the teacher by email to establish the date of the exam.