DESIGN OF BUSINESS SERVICE SYSTEMS	
Anno immatricolazione	2016/2017
Anno offerta	2017/2018
Normativa	DM270
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	COMPUTER ENGINEERING
Curriculum	Double Master in Services Engineering A
Anno di corso	2°
Periodo didattico	Primo Semestre (02/10/2017 - 19/01/2018)
Crediti	12
Lingua insegnamento	This course includes 2 modules, namely Design of Business Processes (BP) and Design of Service Systems (SS). The first module addresses the design of Business Processes (BP). A BP is a sequence of activities through which an organization delivers a service to external or internal consumers. Internal consumers include the departments if the organization itself, e.g. Human Resource services supplied by HR department of an organization. External consumers include the customers of an organization e.g. the patients of a healthcare service. The performance of BPs largely determines the operational performance of an organization. Inefficient BPs put an organization out of the market and ineffective BPs drives customers away. The course aims at designing effective and efficient BPs which can be also sustainable. The second module addresses the design of Service Systems (SS). SSs, based on Services Computing concept, rely on Big Data technologies and are typically deployed through mobile devices. SSs sit on the top of Internet and orchestrate diverse information (images, text, numerical data). SS can enable augmented services, also called "big services ", where a digital service augments a physical service. Uber is a good example of big service, where a physical service (the taxi ride) is enabled by a mobile App, which in turn cooperates with a taxi monitoring system, map services etc. A first key point is, then, the overall architecture of a SS, by identifying the service stakeholders, the related value propositions, and the elementary services to be orchestrated. A second point is the management of internet data, which come from sensors (IOT based systems) or social networks

	(crowd-sourced systems). Hence, SSs should check if such information is relevant and reliable, by a set of techniques that stem from deep learning and alike sciences.
Prerequisiti	The course focuses on requirements analysis. Hence, it addresses modeling/analysis techniques as UML, BPMN. A basic knowledge of organization theory is recommended.
Obiettivi formativi	This course provides concepts and techniques for modelling, assessing and designing Business Processes (BP) and Service Systems (SS). Also, in both modules, the course gives an overview of BPs in the enterprises and of some common SSs. At the end of the course, students will have a good command of the techniques for BP and SS analysis.
Programma e contenuti	Business Process Design (BP) (more information in the syllabus of the Design of Business Processes) • Modelling Business Process (BP): techniques to describe BPs at different abstraction levels and from different perspectives. • Mapping and assessing Business Processes (BP) in enterprises: modeling BPs of the whole enterprise. • Business Process Design: a framework for sustainable BPs. • Design of BP projects: a reference framework Design of Service Systems (more information in the syllabus of the Design of Service Systems) • Foundations on Services Systems (SS) The layered architecture of SS- Information sources: feeds, sensor data, public data, database, geographic data. The SS design roadmap • Services for personal mobility and indoor and outdoor navigation. Design of traveler supporting systems. • Crowd sourced and recommendation systems. The issue of trustworthy information. City feed case study. Foundation of data science. Social Networks and data analysis
Metodi didattici	Most topics will be taught through a complete learning cycle that will be based on the sequence • Lecture on foundations (stimulus) which is aimed at explaining "What it is" • Case study / Exercise (reinforcement) which is aimed at showing "How it is made" • Project work made by student teams which intends to let students learn "How to make it"
Testi di riferimento	• BPMN v2.0 Examples document • Supply Chain Operations Reference-model (SCOR) • G. Motta A primer on BP • PMI - Project Management Body of Knowledge (PMBOK) • Journal Articles • Case studies
Modalità verifica apprendimento	Evaluation will be based on • 1/3 the project work – the mark is given to the student team • 1/3 the individual presentation of the team project

• 1/3 the individual oral or written exam on foundations

L'insegnamento è suddiviso

507316 - **DESIGN OF BUSINESS PROCESSES**

503234 - **DESIGN OF SERVICE SYSTEMS**

Anno Accademico 2017/2018

DESIGN OF BUSINESS PROCESSES	
Anno immatricolazione	2016/2017
Anno offerta	2017/2018
Normativa	DM270
SSD	ING-INF/05 (SISTEMI DI ELABORAZIONE DELLE INFORMAZIONI)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	COMPUTER ENGINEERING
Curriculum	Double Master in Services Engineering A
Anno di corso	2°
Periodo didattico	Primo Semestre (02/10/2017 - 19/01/2018)
Crediti	6
Ore	56 ore di attività frontale
Lingua insegnamento	A Business Processes (BP) is a sequence of activities through which an organization delivers a service to external or internal consumers. Internal consumers include the departments if the organization itself, e.g. Human Resource services supplied by HR department of an organization. External consumers include the customers of an organization e.g. the patients of a healthcare service. The performance of BPs largely determines the operational performance of an organization. Inefficient BPs put an organization out of the market and ineffective BPs drives customers away. The course aims at designing effective and efficient BPs which can be also sustainable.
Tipo esame	SCRITTO E ORALE CONGIUNTI
Docente	MOTTA GIANMARIO PIERO ANTONIO (titolare) - 6 CFU
Prerequisiti	The course focuses on requirements analysis and on Business Process Modeling. Hence, it relies on modeling/analysis techniques as UML, BPMN. A basic knowledge of organization theory is recommended
Obiettivi formativi	This module provides concepts and techniques for modelling, assessing and designing Business Processes (BP). At the end of the course,

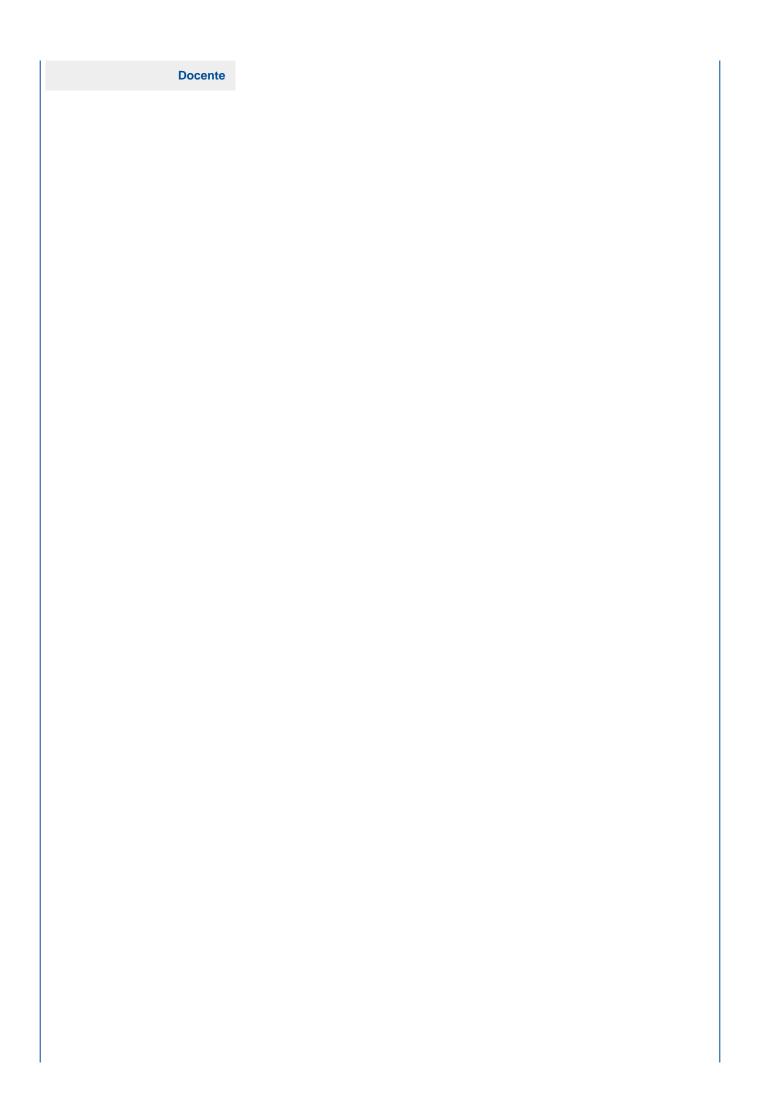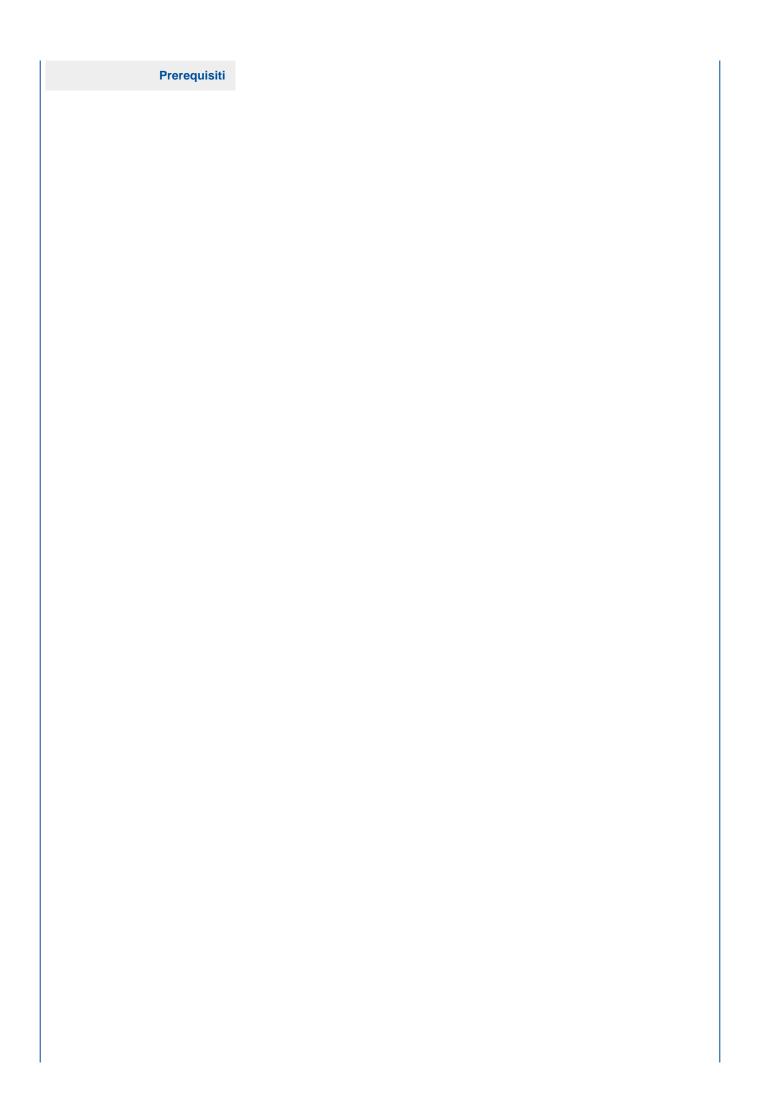|	
	students will have a good command of the techniques for BP analysis.
Programma e contenuti	PART 1 – Modelling Business Process (BP) techniques for describing BPs at different abstraction levels and from different perspectives. • BP Definition: the CRASO paradigm, BP structure • BP Modeling: narrative, hierarchical, and flow models; BPMN and UML-EP PART 2 – Mapping and assessing Business Processes (BP) in enterprises: techniques for modeling the BPs of the whole enterprise. • Overview of the BPs in enterprises: primary, support, and managerial BPs • General Reference Models for BPs: Value Chain, Anthony, GEF grid • Industry reference models for BPs: SCOR (Supply Chain Operations Reference model) and others PART 3 –Business Process Design: a framework for sustainable BPs: • Galbraith's organization design model • Foundations on design variables,: Corporate strategy and business model , BP activities, Organization structure (macro-structure, micro-structure, Business Process Ownership), Skills and competences, Control and reward , IT support • Approaches to BP design: Department oriented, Process oriented, Stakeholder oriented PART 4 –Design of BP projects: a reference framework • Project design techniques and models: Project Breakdown Structures (OBS, PBS, ABS, WBS), work packages and milestones, Gantt • Project control: risk management and impact management
Metodi didattici	Most topics will be taught through a complete learning cycle that will be based on the sequence • Lecture on foundations (stimulus) which is aimed at explaining "What it is" • Case study / Exercise (reinforcement) which is aimed at showing "How it is made" • Project work made by student teams which intends to let students learn "How to make it"
Testi di riferimento	• BPMN v2.0 Examples document • Supply Chain Operations Reference-model (SCOR) • G. Motta A primer on BP • PMI - Project Management Body of Knowledge (PMBOK) • Journal Articles • Case studies
Modalità verifica apprendimento	Evaluation will be based on • 1/3 the project work – the mark is given to the student team • 1/3 the individual presentation of the team project • 1/3 the individual oral or written exam on foundations
Altre informazioni	
Obiettivi Agenda 2030 per lo sviluppo sostenibile	$lbl_legenda_sviluppo_sostenibile

DESIGN OF SERVICE SYSTEMS

Anno immatricolazione	2016/2017
Anno offerta	2017/2018
Normativa	DM270
SSD	ING-INF/05 (SISTEMI DI ELABORAZIONE DELLE INFORMAZIONI)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	COMPUTER ENGINEERING
Curriculum	Double Master in Services Engineering A
Anno di corso	2°
Periodo didattico	Primo Semestre (02/10/2017 - 19/01/2018)
Crediti	6
Ore	56 ore di attività frontale
Lingua insegnamento	This course is the second module of the course 507315 - DESIGN OF BUSINESS SERVICE SYSTEMS. It addresses the design of Service Systems (SS) and follows up the course on Business Processes. SSs, based on Services Computing concept, rely on Big Data technologies and are typically deployed through mobile devices. SSs sit on the top of Internet and orchestrate diverse information (images, text, numerical data). SS can enable augmented services, also called "big services ", where a digital service augments a physical service. Uber is a good example of big service, where a physical service (the taxi ride) is enabled by a mobile App, which in turn cooperates with a taxi monitoring system, map services etc. A first key point is, then, the overall architecture of a SS, by identifying the service stakeholders, the related value propositions, and the elementary services to be orchestrated. A second point is the management of internet data, which come from sensors (IOT based systems) or social networks (crowd-sourced systems). Hence, SSs should check if such information is relevant and reliable, by a set of techniques that stem from deep learning and alike sciences.
Tipo esame	SCRITTO E ORALE CONGIUNTI

MOTTA GIANMARIO PIERO ANTONIO (titolare) - 4 CFU
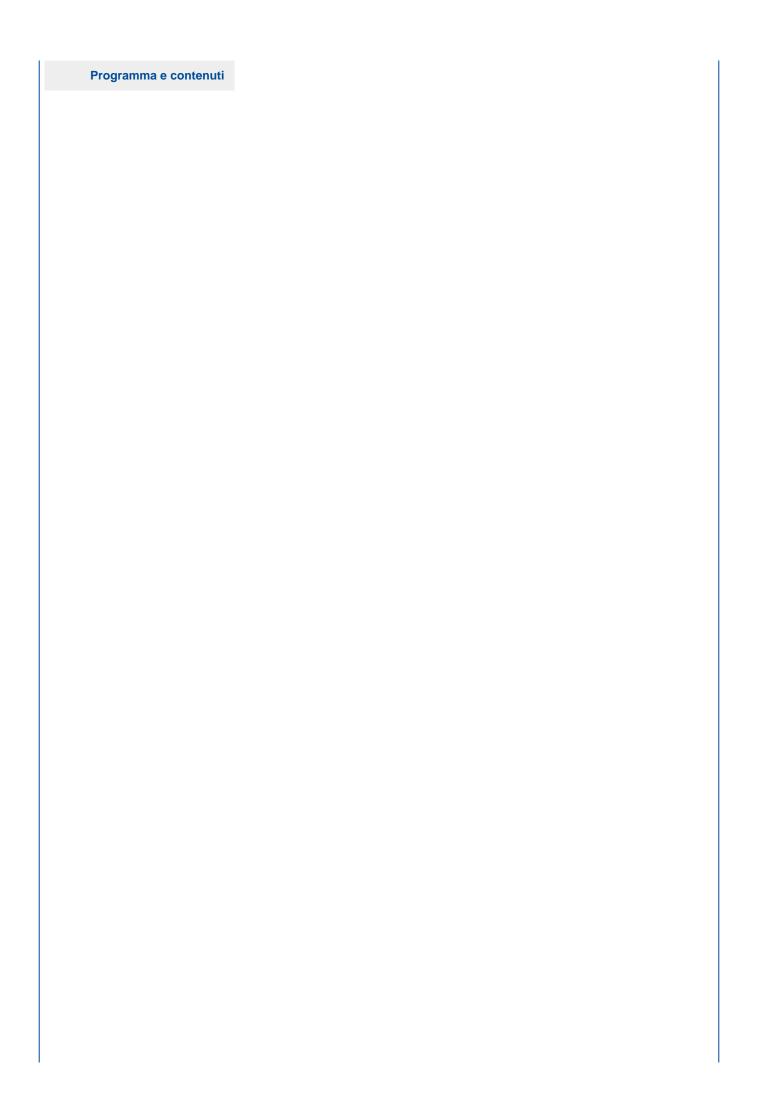LONGO ANTONELLA - 2 CFU

Prerequisiti

The course focuses on requirements analysis and on the SS architecture. Hence, an overall knowledge of business modeling/analysis techniques as UML, BPMN, ER (Entity Relationship) is highly recommended. Also, a general knowledge on Software Engineering is required.
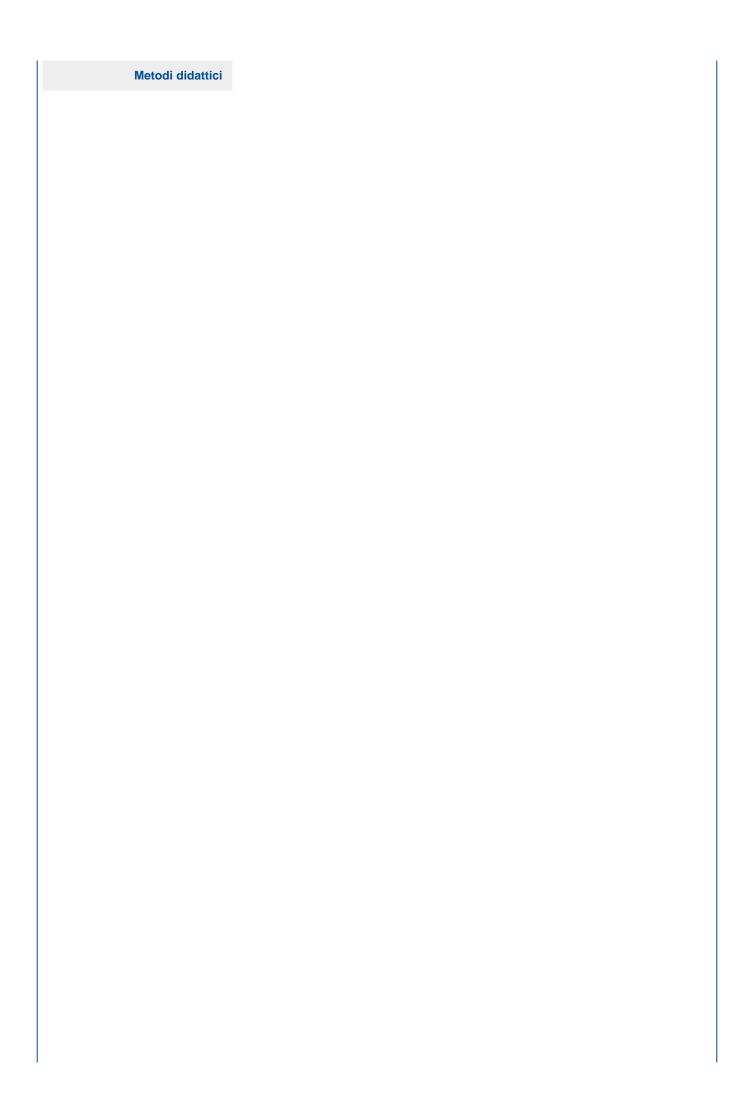
Obiettivi formativi

At the end of the course students shall:
(a) Know the overall business architecture of Service Systems
(b) Be able to model SS user requirements
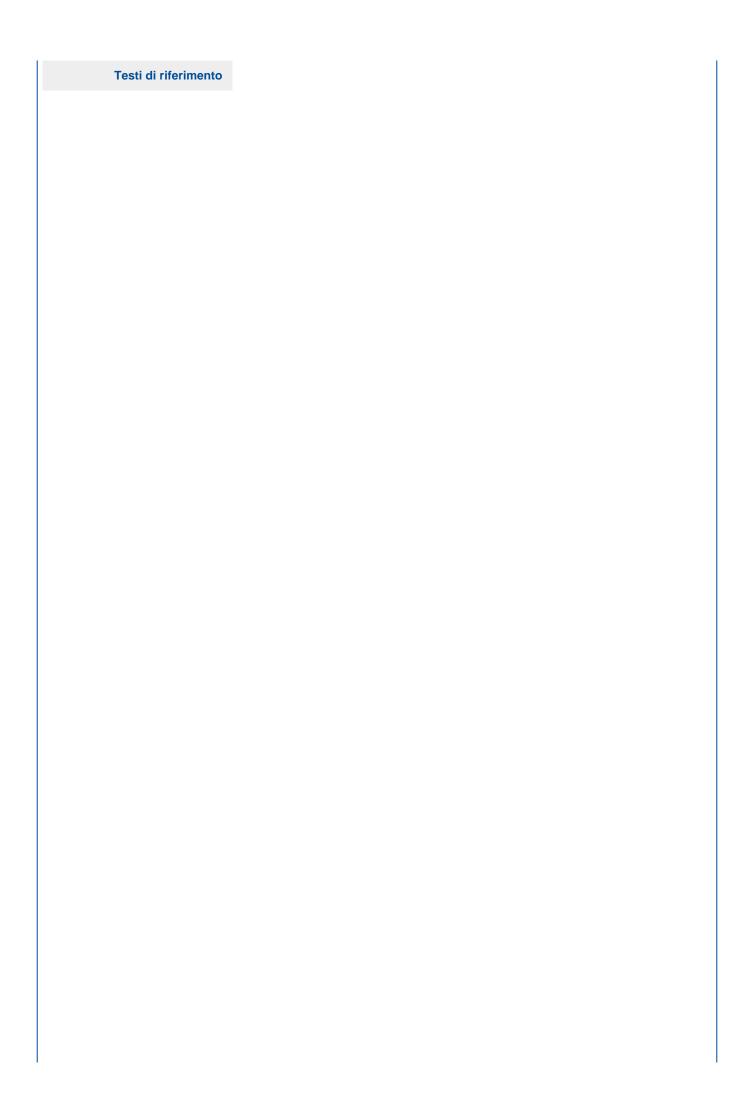(c) Be able to implement a simple prototype

Programma e contenuti

1. Foundations on Services Systems (SS) The layered architecture of SS- Information sources: feeds, sensor data, public data, database, geographic data. The SS design roadmap
2. Services for personal mobility and indoor and outdoor navigation. Design of traveler support systems.
3. Crowd sourced and recommendation systems. City feed case study.
4. The issue of trustworthy information. Foundations of data science. Social Networks and data analysis
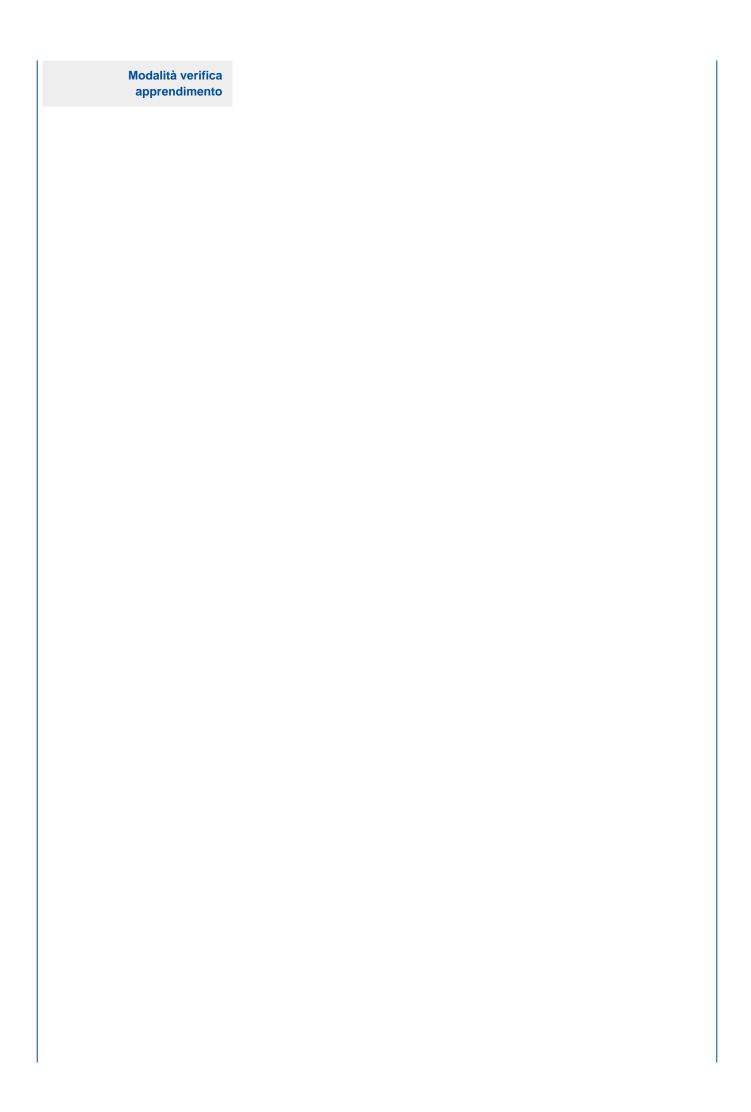
Metodi didattici

Most topics will be taught through a complete learning cycle that will be based on the sequence
• Lecture on foundations (stimulus) which is aimed at explaining "What it is"
• Case study / Exercise (reinforcement) which is aimed at showing "How it is made"
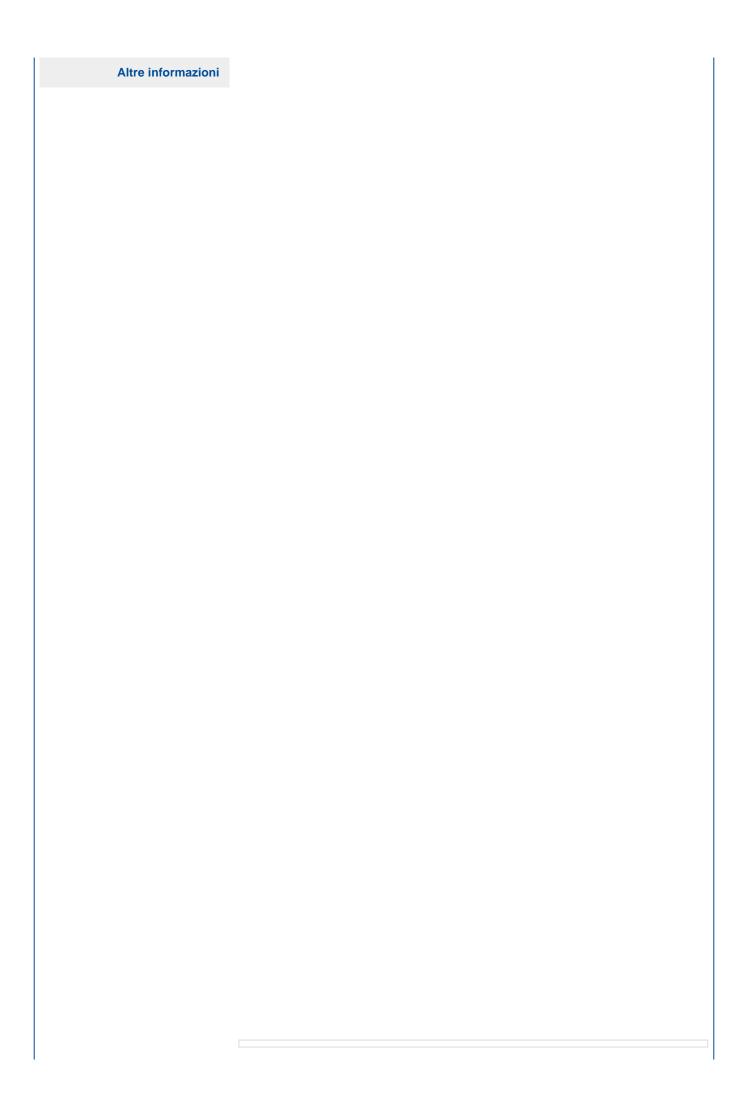• Project work made by student teams which intends to let students learn "How to make it"

- Journal articles
- Case studies

**Modalità verifica
apprendimento**

Evaluation will be based on
- 1/3 the project work – the mark is given to the student team
- 1/3 the individual presentation of the team project
- 1/3 the individual oral or written exam on foundations

Altre informazioni

Obiettivi Agenda 2030 per lo sviluppo sostenibile	$lbl_legenda_sviluppo_sostenibile