Business Intelligence

OBJECTIVES

In a competitive and rapidly evolving environment, companies have to monitor frequently their activities and control their business surrounding. For that, the extraction of knowledge is crucial from internal & external sources of data coming from numerous information systems. The Business Intelligence major offers multidisciplinary engineering training in Computer Science and Statistics in order to masterize the collection, storage, and analysis of big data and provides essential results for decision-making.

JOB PROSPECTS

Data scientist, data analyst, data Engineer, database administrator, Data Architect, Business Analyst, datawarehouse engineer, decisional engineer, and R&D Engineer.

Course content

SEMESTER 1

PROJECT-BASED LEARNING IN WEB DEVELOPMENT

- Database management system : relational and object models, database schema, queries analog filter, power management
- Web architecture : client, server, communication protocolssensor management, bluetooth link
- HMI : ergonomy, dynamic contents generation, formatting
- Propagation & Antenna, Digital transmission, Link budget

NETWORK FUNDAMENTALS

- Network communication, communication channel
- Layer approach, OSI model, TCP/IP model
- Network devices, Network addressing models

JAVA/SOFTWARE ENGINEERING

- Java programming
- Software engineering
- Agile software development methods

DATA SCIENCE FUNDAMENTALS

- Probability theory
- Statistics (descriptive statistics, statistical theory of estimation, hypothesis testing)
- Data science (principal component analysis, linear regression)

CYBER SECURITY

- Information systems security
- Web application and network security
- Introduction to Cryptography, etc.

INTRODUCTION TO RESEARCH

- Definition of research: procedures, organization and purposes
- Targeting information (specialized sites, books, open archives, etc.)
- Bibliographic study: synthesis of the research works
- Modeling a scientific problem
- Writing a scientific publication
- Ethics, integrity and scientific rigor

ENGLISH, FRENCH AND HUMANITIES COURSES

SEMESTER 2

MACHINE LEARNING

- Implementation of a problem decomposition heuristic
- Specification of the resources required for resolution
- Resolution planning and successive refinements

METHODS AND TOOLS FOR BI

- Business Intelligence
- Decision process
- Data warehouse, data mart, data cubes
- ETL: extract transform and load

DATABASES AND BIG DATA

- Advanced querying techniques
- Non-relationnal databases

DEEP LEARNING

- Neural networks
- Face recognition, voice assistants, and translation apps

ENGLISH, FRENCH AND HUMANITIES COURSES

CHOOSE ONE COURSE BETWEEN:

INTERNATIONAL BUSINESS INNOVATION PROJECT

- Build real business model in a multicultural team
- Create innovative idea with marketing & business strategies
- Present final business model to professionals

RESEARCH AND INNOVATION
MANAGERIAL TRAINING
ECO-DESIGN
PERSONAL AND CAREER

SEMESTER 3

BUSINESS ORGANIZATION AND INFORMATION SYSTEMS

- Generic Organization of a firm (architecture, modules)
- Sectoral organization (financial, banking / insurance, government, telecom, education, health,...)
- Developing a strategy and its implementation
- Monitoring the implementation of the strategy
- Integration of different actors in the value chain (B2B, e-commerce, CRM)
- Integrating data (indicators, Business Intelligence, distribution of data)
- Apprehension of the IS environment, competitive intelligence, business intelligence

SEMANTIC WEB AND KNOWLEDGE MANAGEMENT

- XML, Xquery, Xpath, XSLT
- RDF (Resource Description Framework) and RDFS
- Open Linked data
- SPARQL, Triple stores
- OWL, TF.IDF, ElasticSearch, Solr

PROJECT

The project is composed of an advanced case study. The students will be called upon to use the knowledge, design techniques and tools that they learnt through their courses

ENGLISH, FRENCH AND HUMANITIES COURSES

CHOOSE TWO COURSES AMONG:

ADVANCE DEEP LEARNING

Deepening of the Semestrer 2 program

AUDIT AND RISK MANAGEMENT

- Data security, Secure Programming
- Main application vulnerabilities (Cross scripting (XSS), SQL injection, ...)

SMART CITIES

- Challenges of the smart city
- Instructions for a stronger economic development
- Industry 4.0 market technical
- Smart Transportation
- Aviation market techno-economic analysis

GLOBAL HEALTH SYSTEMS

- Global health systems, comparing and contrasting
- The role of data, information, and knowledge
- Global health challenges
- Health impacts, health outcomes, and the measurable objectives of Health interventions
- Spaces and places for care delivery
- Continuum of care & care coordination

TESTING AND AUTOMATION

- Test automation architecture (TAA), strategy (TAS) and framework (TAF)
- Testability of the SUT (System Under Test)
- Metrics and reporting for test automation
- Transition from manual testing to an automated environment.

SEMESTER 4

INTERNSHIP

The internship with an international company will enable students to display valuable professional skills and attitudes developed during the three academic semesters. Companies usually give a stipend to the trainees.

Syllabus: subject to minor modifications