Tax & Technology I

Preliminary

Study Guide

Course 2019/2020

(6 ECTS)

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A. Introduction

Legal technology is rapidly transforming both the practice and the theory of tax law. As we begin to train the future generation of tax lawyers who understand the intricacies and potential of this development within tax law, this course seeks to explore both the current trends and the future possibilities of this technological transformation.

It is a worldwide trend that tax authorities increasingly use technology to promote compliance. An emphasis is laid upon collecting and managing (big) tax data in order to insure a correct tax payment and detection of fraud. This trend goes hand in hand with further digitalization of information exchange between tax authorities and taxpayers. Industry and business communities also use technology to optimize tax processes and to comply with reporting obligations. This course explore the fiscal and technological aspects that form the foundation of this process.

However, the course does not aim to solely focus on compliance issues but will cover and investigate new possibilities in validation of a broader use of technology in taxation. Beyond the current and near-term technologies are core academic and philosophical questions that will have increasing impact as machines gain in sophistication and capability. Also the inherent risks and possible setbacks of the new technological approach are to be discussed. Altogether, the purpose of the new course is therefore to form a multilateral insight into the processes behind technological approach.

B. Organization

Tax & Technology is split into three 7-week courses, Tax & Technology I and Tax & Technology II and will be cross listed between the Vrije Universiteit Amsterdam (Tax & Technology I), Tilburg University (Tax & Technology TiU II) and the Maastricht University (Computational Science of Taxation) .

Courses will consist of 1,5 hours lectures, followed by 1,5 hours tutorials. Tax & Technology I will commence on Friday, September 6, 2019 (10.30 - 13.30) at the Vrije Universiteit Amsterdam. The starting date of Tax & Technology II and Computational Science of taxation will be announced at a later stage.

Location and time:

- Initium Building, IN-3B44/50/52, Boelelaan, Amsterdam
- VU, Fridays 10.30 – 13.30, 6 September 2018 – 18 October 2019
- Exam Friday 25 October, 10.30 – 14.00
- Resit Friday 20 December, 12.00 – 16.00

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Office hours: Fridays, 9.00-17.00

Program

Lecture	Module	Date
1	Programming	6 September
2	Data Management	13 September
3	Tax Determination & Implementation	20 September
4	Data Exchange and Reporting	27 September
5	Data Analytics	4 October
6	Data Quality	11 October
7	Machine learning applied in tax	18 October

See further Section D

C. Course requirements

The lesson plan is dynamic and is open to possible adjustments. See Section D for the current program.

The students are encouraged to contribute to the development of the this increasingly important and dynamic technological area.

Please feel welcome to come forward with the new ideas. Your willingness to explain concepts from your area of expertise to students from different backgrounds is highly appreciated.

Completing assignments and reading material published on Canvas, attendance and class participation is mandatory. Please bring a (fully charged) laptop.

Each tutorial will have the following broad outline:

- Deep-dive into materials covered by lecture
- Discuss previous assignments and practice coding
- Class discussion

A 0,5 point bonus for the exam can be obtained in case when all classes are attended and other mandatory requirements are satisfied (See announcements on Canvas).

Reviewing of additional literature may be made mandatory during the course. This will be announced on Canvas.

The exam for Tax & Technology I will consist of an assignment on a computer.

D. Courses

D.1 Programming (6 September)

Topics

- Tax & Technology introduction (30 min)
- Introduction to programming
- Programming basics in Python
- Algorithmic thinking
- Case introduction

Learning goals

- Provide students with a general introduction to the course.
- Learning the basics of programming.
- Learn programming dictionary

D.2 Data management (13 September)

Topics

- Basics of ERP systems
- Data types
- SQL basics
- Database diagrams

Learning goals

- Gain insight into the architecture of a ERP system
- Identify common data management caveats
- Learn the data dictionary
- Learn the basics of SQL

D.3 Tax Determination & Implementation (20 September)

Topics

- Tax modules (payroll tax, corporate income tax, etc.)
- Configuration
- Tax Codes
- Tax Data quality frameworks/ governance

Learning goals

- Understanding critical data elements for tax determination and compliance
- Gain insight in difference between the processing of tax master data and transactional data
- Relation between master transactional data and reporting

- Understanding various data structures

D.4 Data exchange and reporting (27 September)

Topics

- SAF-T
- Webservices and API's
- 'Real-time' data vs. periodic data
- Country-by-Country reporting

Learning goals

- Understanding the legal framework of data reporting
- What kind of input data is required for the purpose of tax filing, how do you retrieve this data?
- Recognize the impact of the increase of mandatory data reporting

D.5 Data Analytics (4 October)

Topics

- Data visualisations
- Google Analytics
- Pre-processing the data

Learning goals

- Learn how to visualize data for tax purposes
- Identify data visualization caveats
- Understand the basic concepts of analytics
- Learn the analytics dictionary

D.6 Data Quality (11 October)

Topics

- Input data quality
- Data standards and outlier detection
- Fuzzy logic in relation to error detection
- Completeness, precision, accuracy, consistency

Learning goals

- Make students aware of the importance of data quality
- Provide students with the ability to recognize errors in data sets
- Students should be able to make an impact analysis as regards data errors
- Recognize when and where data quality should be tested

D.7 Applied Machine Learning in Tax (18 October)

Topics

- Digital Fraud
- Implications of fraud detection
- Implications of dirty data
- Impact on information asymmetry for tax purposes
- Data ethics and security

Learning goals

- Understand basic concepts of machine learning applications
- Understand the possibilities and restrictions of machine learning in tax