



Semester Guide

ICT & Business
 3rd semester 2122NJ
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Preface

Welcome to the 3rd semester of ICT & Business!

This semester guide serves as a reference work, containing all the relevant static information needed to successfully complete this semester. The more dynamic information, such as the current topics, can be found in the Learning Management System (LMS) *Canvas*. This document includes all formal information on topics, teaching materials and assessments. Also, a list of the Partners in Education (PiE) and information about previously conducted evaluations can be found.

Changes and additions to the content are possible. These will of course be communicated in a timely and clear manner to everyone involved via Canvas and incorporated into the following versions of this semester guide.

We wish you lots of success and fun during this 3rd semester!

On behalf of the teaching staff of the 3rd semester,

Marco Hormes, Joris van der Straten and Kees Velthuijs

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Education Guide

This document contains general information about the 3rd semester. Some sections are split into Eindhoven/Tilburg where differences apply.

Course-based learning

With the course-based teaching method, you know what you will be studying in advance and what your learning activities will be. The lessons, the workshops, the guidance and the projects in practice have been planned by the teachers beforehand. You get frequent feedback on the lessons, during the guidance moments and on the submitted assignments.

The order of the learning activities is also established in advance. This provides structure and the assurance of knowing what to expect. Once you have good theoretical knowledge, you will start learning how to apply it in practice.

Demand-based learning

With demand-based learning, you are free to decide how you will approach the semester. This will correspond with what you already know. You can also determine your own pace.

The learning outcomes have already been set and these form the basic starting points of this teaching method. On your own, you search for knowledge and the skills you need (together with other students in your group) in order to be able to solve important real-world issues. Teaching materials are offered in an online learning environment, but you can also consult your own sources. The instructor will help you with any questions you may have and provide feedback frequently. If necessary, workshops and instructions can be arranged.

Contents

Information S3

The focus of this semester is on a medium to large-sized organisation that is part of a supply chain. During this semester you show that you can **systematically analyse organisational processes** and **advise** how these **processes** can be **optimised**. In order to **analyse** these processes you will **create informal insight** through an **Exploratory Data Analysis (EDA)**. Besides that, you will **create formal insight** in the **data** using **basic modelling**. Using these insights, you **realise** a suggested **IT system** (or part thereof) based on your **design**, **implement** this in the **organisation** using given techniques and **measure** and **monitor** the **usage** using given formats and/or **methods**.

Professional Task

The professional task, in which we work together with our Partners in Education (PiE's), offers you the opportunity to integrate and apply the above skills together with your fellow students. In addition, you will gain more professional skills during the professional task with regard to the following four learning outcomes in the field of Personal Development. For bachelor students this refers to the learning outcomes: **targeted interaction, investigative problem solving, future-oriented organisation** and **personal leadership**. Whereas for the associate degree, this refers to: **targeted communication, co-operation, problem-solving ability, learning skills** and **methodical intervention**.

During the professional task the following professional products will be created:

1. Based on your analysis of the business, you will provide the customer with a **Business Advice** on how to optimise their processes within the organisation. Your advice will take into account:
 - The context of the organisation within a (supply) chain
 - The root cause(s) of the problem
 - The processes involved in the optimisation
2. An **interactive dashboard** which gives the customer both informal and formal insight (based on modelling) in its business processes. Data is combined from several sources and basic modelling (such as linear regression) is applied. Besides the dashboard itself the following deliverables are expected:
 - Documentation about the applied underlying techniques and models of the dashboard
 - Test report which contains validation of the results of the dashboard
 - Deployment / User Guide which helps the customer installing and using the dashboard in its own company
3. Based on the advice and the dashboard, an **Implementation Plan** will be made on how the improvement should be implemented. The following elements must be part of this plan:
 - The project management approach, including the governance, change and risk management of the implementation

- The impact of the change for the functional organisation of the customer
- How the adaptation of this improvement is arranged (e.g. test approach and user adoption)

Business Showcase Event

As a completion of the professional task and as a supplement to your Personal Development substantiation in your portfolio, you pitch your realised solution as a group during our own event: Business Showcase Professional Tasks. Inspire each other, teachers and Partners in Education. The event takes place in lesson week 18 on Wednesday afternoon on January 19th 2022 at location R10.

Learning Outcomes

Associate degree

Learning outcome 1: Business Analysis

You show that you can systematically analyse organisational processes and advise how these processes can be optimised.

Clarification:

The **organisation** is medium to large size and part of a supply chain and therefore **processes** are assessed on governance, risk and compliance.

Analysis consists of the correlation of the bottlenecks and cause-effect relationships of the organisation within the supply chain.

In your analysis you emphasise the origin of bottlenecks in the supply chain using process diagrams. Based on this information you create a gap-fit analysis.

Learning outcome 2: Explore Data

You create informal insight through an Exploratory Data Analysis (EDA).

Clarification:

Creating insight, comprises the definition of the right sources, collecting usable data (subsets) from those sources, joining, transforming and cleaning the data. In addition, you evaluate and assess the **quality of the data** (completeness, consistency, conformity, accuracy, integrity and timeliness). Finally, you create visuals of the prepared data. The insight creation is in the visualisation of the data and the possible interpretation of it. Often, it is up to the business representative to come up with conclusions and actions based on these visualisations.

Exploratory Data Analysis (EDA) includes usage of SQL, tidyverse (with R Studio) and end user BI tools.

Learning outcome 3: Understand Data

You create formal insight in the data using basic modelling.

Clarification:

Explanatory Data Analysis continues where Exploratory Data Analysis stops: based on the data preparation and the insights gained from informal, visual analysis, formal models are applied to the data to get further insight.

Use of models in Explanatory Data Analysis in LE3 Business will be restricted to simple linear modelling and simple time series analysis.

Learning outcome 4: Business optimisation

You realise a suggested IT system (or part thereof) based on your design, implement this in the organisation using given techniques and measure and monitor the usage using given formats and/or methods.

Clarification:

Realise the **implementation** and acceptance of procedures in correlation with new or adapted information provision and control.

Educate and train end-users in the renewed processes and use of a new IT.

Build and validate the Proof of Concept.

Structure a standard application (for example, CRM, ERP, BI).

Learning outcome 5: Targeted communication

You use appropriate communication to address your audience considering the task, your role and your audience.

Clarification:

When communicating, you translate policy into practice.

Based on your message, your position and the person you address, you choose the right channel and vocabulary.

You can reflect on the effect your communication has and take your role, your team and your audience into account.

Based on the reflection, you define steppingstones ahead on the task, on the role and on the projected result.

Learning outcome 6: Co-operation

You can co-operate with others and manage an operational team to achieve a shared result.

Clarification:

Co-operation means that you are aware of the task and are aware of your role in the team and contribution to the team.

When **managing** the operational team, you divide the work at hand into tasks and assign them to members of the team based on their individual skills. During execution, you organise extra support when needed to obtain the required result.

Learning outcome 7: Problem-solving ability

You can analyse operational issues and define areas of solution to explore. You can implement appropriate solutions.

Clarification

During the process of both analysis and implementation, you postpone judgement. By keeping your curiosity and formulate the appropriate questions, you grasp the perspectives of the persons involved.

You match the operational issues with the right approach, pragmatic, critical and based source material.

While implementing, you use a given methodology and legitimate the proposed solution(s).

Learning outcome 8: Learning skills

You can adapt to the ever-changing role within the professional environment.

Clarification

Within this semester, you investigate your chosen job profile as assistant information manager or Business intelligence employee. You define how you distinguish yourself from others in the same job profile and demonstrate that in your professional attitude.

You are aware of your talents, your ambitions and future position(s) that will keep you up to date as a professional.

Learning outcome 9: Methodical intervention

You use given theory and methods from the field and apply this to the professional context.

Clarification

The **theory and methods from the field** refers to the content instructed in class.

The **professional context** is a practical issue in the field without a standard solution.

When **applying**, the student shows his skills and reflects on his choices and actions.

Learning outcome 1: Business analysis

You show that you can systematically analyse organisational processes and advise how these processes can be optimised.

Clarification

The **organisation** is medium to large size and part of a supply chain and therefore **processes** are assessed on governance, risk and compliance.

Analysis consists of the correlation of the bottlenecks and cause-effect relationships of the organisation within the supply chain.

Learning outcome 2: Exploratory Data Analysis

You create informal insight through an Exploratory Data Analysis (EDA).

Clarification

Creating insight, comprises the definition of the right sources, collecting usable data (subsets) from those sources, joining, transforming and cleaning the data. In addition, you evaluate and assess the **quality of the data** (completeness, consistency, conformity, accuracy, integrity and timeliness). Finally, you create visuals of the prepared data. The insight creation is in the visualisation of the data and the possible interpretation of it. Often, it is up to the business representative to come up with conclusions and actions based on these visualisations.

Exploratory Data Analysis (EDA) includes usage of SQL, tidyverse (with R Studio) and end user BI tools.

Learning outcome 3: Explanatory Data Analysis

You create formal insight in the data using basic statistical modelling.

Clarification

Explanatory Data Analysis continues where Exploratory Data Analysis stops: based on the data preparation and the insights gained from informal, visual analysis, **formal models** are applied to the data to get further insight.

Use of **models** in Explanatory Data Analysis in LE3 Business will be restricted to **simple linear modelling** and **simple time series analysis**.

Learning outcome 4: Business optimisation

You realise the suggested IT system (or part thereof) based on the design, implement this in the organisation and measure and monitor the usage.

Clarification

Realise the **implementation** and acceptance of procedures in correlation with new or adapted information provision and control.

Educate and train end users in the renewed processes and use of a new IT.

Build and validate the Proof of Concept.

Structure a standard application (for example, CRM, ERP, BI).

Learning outcome 5: Targeted interaction

You determine which partners play a role in the IT assignment, constructively collaborate and fitting communication aimed at achieving the desired impact.

Clarification

You have attention for the various groups of collaborative **partners** including the stakeholders, interest groups and own team members.

You pay attention to what you wish to **communicate** and the impact you wish to make, the most appropriate form to achieve this and the actual execution thereof.

You are aware of your role in the context of the IT assignment, exploring and tackling the tasks involved, addressing others, searching for enrichment and building up trust in an inter-disciplinary and inter-cultural context.

Learning outcome 6: Investigative problem solving

Critically consider IT assignments from various perspectives, identify problems, finding an effective approach and coming up with appropriate solutions.

Clarification

Identifying the problem, determining the aim of **solution** and picking an appropriate **approach**.

Being curious throughout the solving process and asking questions from **various perspectives**, matching these questions with fitting **approach** that is pragmatic, critical and based on answering sources.

Being able to **methodically** and creatively solve problems, finding alternatives and **critically** analysing own and others' line of reasoning.

Learning outcome 7: Future-oriented organisation

You explore the organisational context of IT assignments making corporate, sustainable and ethical considerations and managing all aspects of carrying out the assignment.

Clarification

In **the organisational context** you identify the hallmarks and roles of the environment of the assignment and know the business legitimisation.

By **making corporate, sustainable and ethical considerations** you know the ethical standards, involve social ethical themes in the judgement process, recognise own boundaries and those of others and act accordingly.

Managing all aspects means you make an inventory of subtasks, plan and monitor time, money, quality and ethics of the execution of the work activities, recognise opportunities and risks and ensure a future-oriented embedding of the solution in the organisation.

Learning outcome 8: Personal leadership

You are entrepreneurial in regard to the IT assignments and personal development, while being aware of own learning capacity and keeping in mind what ambitions drive IT professionals and/or which types of positions.

Clarification

Entrepreneurial means you are aware, seeing opportunities and seizing them, motivating oneself and others, being able to profile oneself, a team and others. You are aware of your own development, showing leadership and taking responsibility. According to **personal development** you make a well-considered choice of study, enhancing your own learning capacity, recognising a learning need in yourself and acting accordingly through reflection, evaluation, demanding and giving feedback actively.

You examine what type of professional you want to be in the long term, which field and type of positions you aspire to and how you can stand out from others in the branch.

Testing and Final Judgement

Testing

During the semester, you work in various ways on varying themes and topics. You show the teachers how you learn, develop yourself and use feedback, feed-up and feed-forward. You regularly validate* your process of learning and development with the theme teachers and semester coach. The acquired knowledge and experiences are applied into your professional products. By using the feedback, -up and -forward you create professional products to prove that the learning objectives of this semester have been achieved. In the end, you regularly have your professional products validated* by the teachers and semester coach as well.

Both the validated outcomes of your learning and development process, and the validated professional products, are collected in your semester portfolio. At the end of the semester an assessment takes place in the form of a portfolio check in which the integrated semester assessment is taken.

The portfolio check will only be executed when the portfolio was delivered completely and before the deadline. No portfolio check results automatically in unsatisfactory. The portfolio check is an inspection type A.

* Validation of your proof can be achieved by:

- formative feedback from the theme teacher, in writing,
- formative feedback from the theme teacher, orally and then documented by the student in Canvas -initiated by the student -validated by the teacher,
- formative feedback in the form of Undefined – Orienting – Beginning - Proficient – Advanced.

Support tools

NA

Retake and/or Repair

Our educational system is giving you the opportunity to prove reached learning outcomes during the semester. You receive multiple times (longitudinal) feedback while repetitively showing your results to the teachers, so they have a good view on your product and progress. You are expected to be present regularly ($\geq 80\%$) and to ask feedback frequently (\geq per two weeks). You apply the feedback on your work and have the teacher validate your product. When insufficient presence, asking and applying the feedback and validating the feedback, this cannot be corrected the last week(s), as a profound view of your learning process would be missing. The portfolio check is part of the Practice-related Testing category (see Article 28 of the OER). The portfolio check **cannot** be retaken within the semester. Retake and/or repair is only possible in the next half year, by means of restart.

Judgement

The summative assessment is expressed, at the end of the portfolio check, in U-S-G-O (Unsatisfactory, Satisfactory, Good, Outstanding). An unsatisfactory result leads to restart or a customised semester.

Educational format

Lectures, seminars, self-study, presentations, quizzes, interviews, presentations to the customer, support for professional task by lecturers / semester coaches.

Course materials

Books

ISBN	Title	Author(s)	Publisher	Price
1615470697	Super Charge Power BI: Power BI Is Better When You Learn to Write DAX	Matt Allington	Holy Macro! Books; 3 rd edition	\$ 29.43
-	Super Charge Power BI: Power BI Is Better When You Learn to Write DAX (Kindle Edition)	Matt Allington	Holy Macro! Books; 3 rd edition	\$11.46
9789463011112	Handboek Requirements	Nicole de Swart	Eburon Business	€ 46,50

- The “*Super Charge Power BI*” **3rd edition** can currently only be purchased via the international Amazon (US) website:
<https://www.amazon.com/Supercharge-Power-BI-Better-Learn-dp-1615470697/dp/1615470697/>
- The “*Handboek Requirements*” is only available in Dutch. For English speaking students learning materials will be supplied via Canvas.

Software

Theme	Title	Url	Price
IT	Power BI Desktop	https://powerbi.microsoft.com/en-us/desktop/	Free
Professional Development	Hogeschooltaal	https://www.hogeschooltaal.nl	± € 55
Business	LinkedIn Learning	https://www.linkedin.com/learning	Free

Partners in Education

During the 3rd semester, the following companies will be our Partners in Education:

Eindhoven



Cap Gemini is a French consultancy company, which has its field of activity in IT and consultancy. In 2017, the multinational employed more than 195,000 people worldwide.



Plainwater is a young company in the Business Intelligence sector that, since 2015, operates within a network of companies, mainly focused on the financial functions of organisations.



Quercis, as an Exact Gold Partner, specialises in automating complex financial situations, optimising business processes and realising technical interfaces between software solutions.



Sogeti is a leading IT service provider in the field of technology and engineering services. Sogeti offers solutions that enable digital transformation.

Tilburg



2Fokus provides tailored system solutions that enable everyone to simply read, analyse or control data. They provide the right information in a clear way.



Station88 supports entrepreneurs by sharing knowledge, creating awareness, inspire and motivate in order to grow their businesses.



De Wever

De Wever delivers the care their clients need, based on their four core values: reliable, energetic, competent and hospitable. Daily, employees of De Wever follow the developments in the field in order to improve the care they deliver to their clients. Improving care can mean better care, higher efficiency, but also simpler or more fun.

Semester evaluation

Eindhoven

Course Based

Remark	Follow up
<i>"The Power BI subjects were too difficult at the beginning of the semester."</i>	The Power BI related subjects will be more spread throughout the semester. Some IT related subjects will be rearranged in the schedule.
<i>Based on the assignments it was noticed that the students needed more time to grasp the Problem & Requirements analysis.</i>	Some Business related subjects will be rearranged in the schedule and some subjects (GRC, SCM) will be covered in less depth.

Demand Based

Remark	Follow up
<i>"There is the impression that the Business and IT subjects are not (yet) combined. There is a need for more coherence."</i>	Within the Canvas course several Business related content pages will be restructured and will use the same format which is used for the IT related content pages. This format includes mentioning how the particular subject can be applied within the professional task.
<i>"Students find it difficult to determine exactly where you need to be in Canvas. Professional Product Implementation Plan is mixed up."</i>	The Business related content like <i>Implementation Plan</i> will be restructured.
<i>"For some subjects no exercises are available."</i>	More exercise books will be added.

Tilburg

The outbreak of Covid-19 and the lock-down that followed, has had a major impact on education as a whole. Students mention the main problems in the first two issues.

Remark	Follow up
<i>"Students experience motivational problems caused by the lack of physical presence and contact with other students."</i>	If possible, classes will be onsite instead of online. There will be more attention to the morning kick-off.
<i>"In online classes, students are reluctant to ask questions and to give or request feedback."</i>	Where possible, classes will be divided into a general lecture and a discussion in small groups. During the latter, there is time to discuss the content, ask

Remark	Follow up
	questions or request feedback. The teacher will join when requested.
<i>“The workload builds up during the semester. Students feel a lot of pressure at the end.”</i>	More attention will be drawn to the content in the Canvas course. This must provide students with more overview of all the subjects in the course. Thus giving them more information on the total amount of work to be done.