

Course Unit Realisation Data

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Introduction

Purpose of the Document

The Course Unit Realisation Data specification will create preconditions for the development of intra- and inter-university data systems so that they could better attain a level necessitated by the planning of studies (electronic personal study plans, 'eHOPS') and flexible student mobility. Its main purposes are:

- to standardize the description of course unit realisations
- to facilitate the transfer of course unit realisation data

The present specification does not model data on completed studies. A separate specification (M3, see Figure 1) will be produced to enable the interchange of data on completed studies between different data systems. The completed studies data contains, for example, information on grades obtained and the date when the course/study module was completed.

Document Contents

The present document provides a data model for the teaching offering data i.e. the course unit realisation data.

The current specification will complete the course unit data of the degree structure data specification. The degree structure data and the teaching offering data specifications have been produced separately due to their different contexts and each includes only the data required by their method of application and internal structure. The degree structure data is by its nature more static than the teaching offering data which may change several times within one academic year. It is, however, possible to complement the current specification with extensions following the development needs as prioritized by the universities. The potential extensions will always be produced as part of the update versions of the current specification.

Degree, Study Module and Course Unit Data specification [M1] described its data model in text format. Because the current *Course Unit Realisation Data* specification [M2] is more technical in its approach, will its data model be presented in table format (Appendix 1). The table format enables a more compact and precise representation of the structure. In addition to the tables, the grouping of the data fields is demonstrated in section 'Grouping of the Fields' and their further classification in Appendix 1. All vocabularies and terms are listed in section 'Vocabulary'.

The *Course Unit Realisation Data* specification will pay attention to the requirements of the ECTS framework where possible. The present specification is not, however, meant to be used as an instruction for acquiring an ECTS label because e.g. the criteria in the user's guide [ECTS-G] does not as such apply to Finnish practice.

About Using the Specification

The use cases taken into account during the production of *Course Unit Realisation Data* specification and the use cases primarily supported by the specification are described (in Finnish) in separate /Use Case Descriptions of the M Specifications/ document maintained at the M specification homepage <http://www.vy.fi/standardit/>.

Relationship to Other Specifications and Standards

The data model is based on earlier course data work [KURS] by the TIEKE working group and the *Degree, Study Module and Course Unit Data* specification [M1].

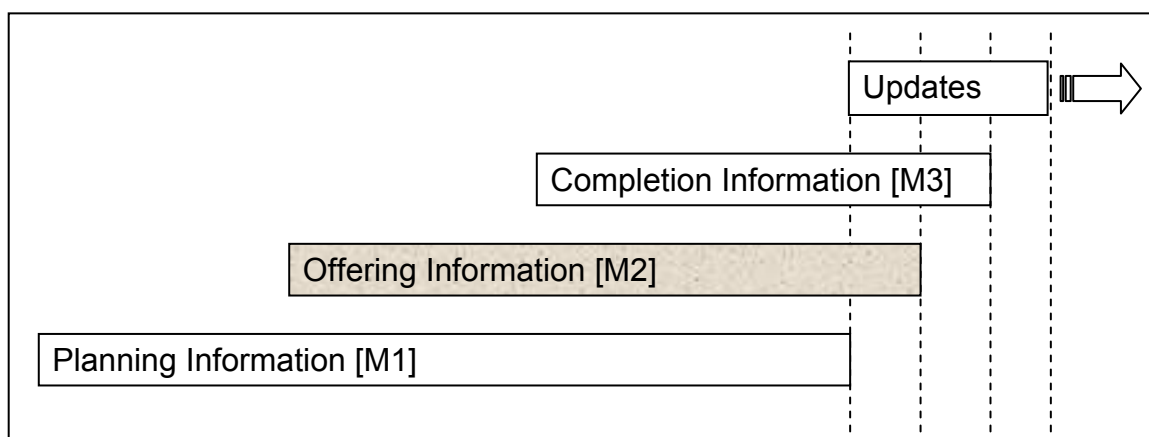
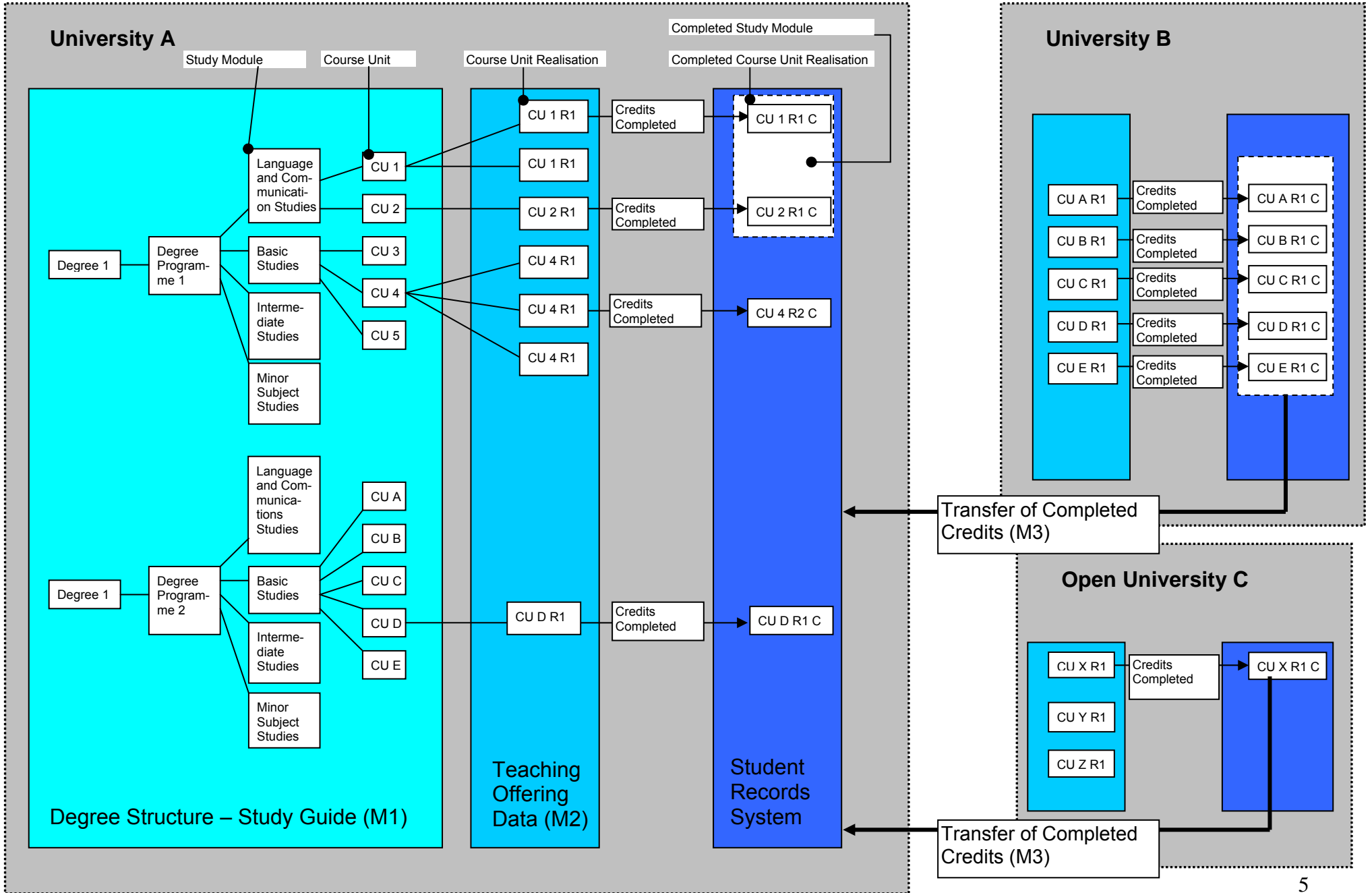


Figure 1: The drafting order of M specifications

The Figure 2 illustrates the utilization of specification documents and their interrelationship. The figure does not model data systems of teaching but indicates the levels on which the data model specifications can be applied. As the specification for the data on completed studies (M3) will be produced separately, such information serves only as examples in the present figure.

Figure 2 (the following page). The relationship between M1, M2 and M3



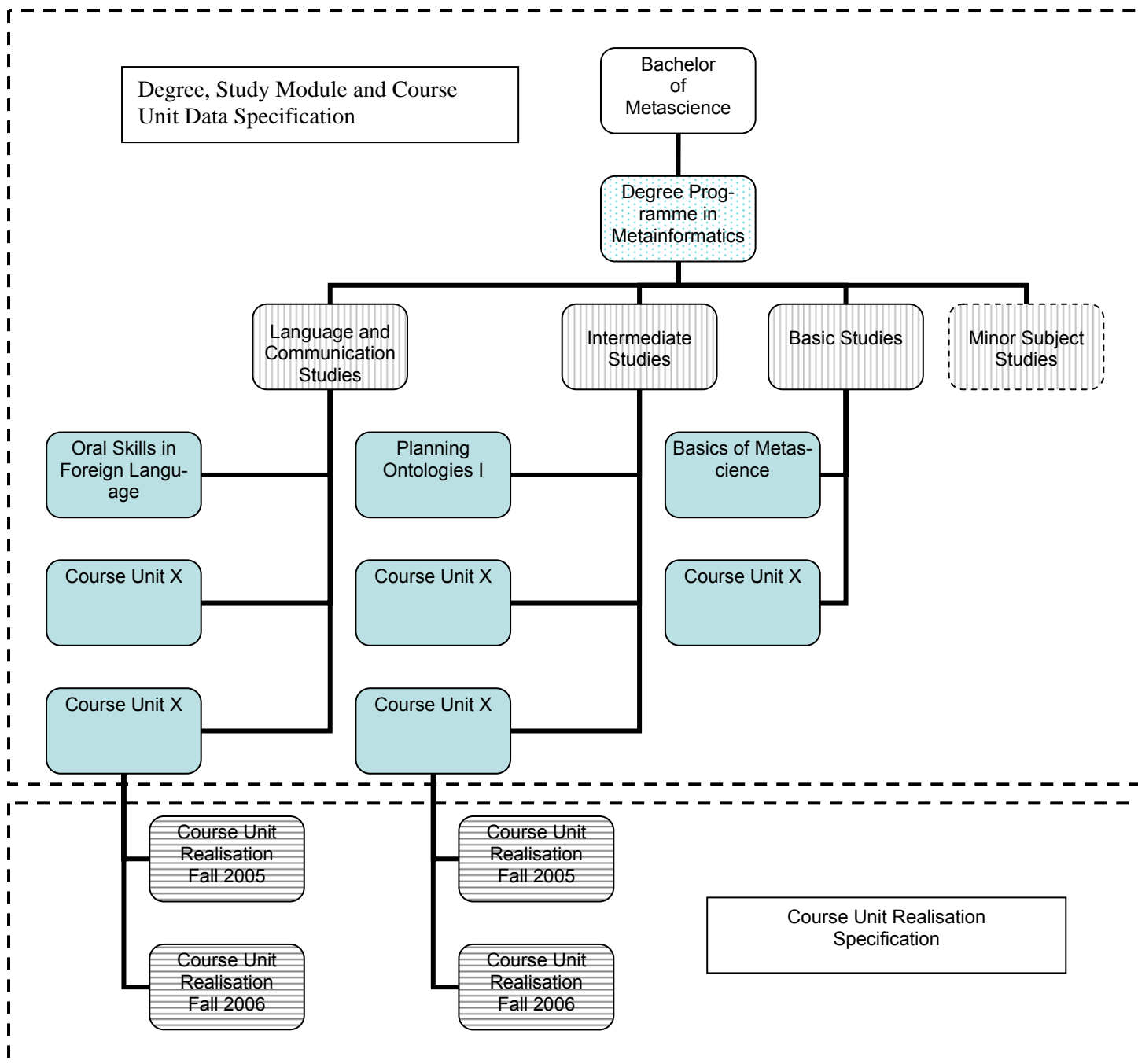


Figure 3. Course unit realisations' relationship to degree, study module and course unit data.

The present specification will complement the planning information model (degree structure) [M1 specification] with groups Registration Information (1.10) and Key Words (1.11) and fields Location (1.9.3), Web Page (1.17), Accessibility (1.19) and Date Issued (1.20). In addition, it will be possible to express Type (1.12). The same information about the course unit type may be found also from the M1 specification but without reference to the course unit in question. Information on the study module the course unit belongs to and the course unit type depends on the degree taken. The course unit type data included in the present specification CANNOT be treated as the degree structure data but has to be considered only a perspective into the offering information with references to different degrees.

In practice, the planning level information may differ from the course unit realisation or completion information concerning e.g. the course unit type. The course unit may be listed in the

study guide as forming part of the intermediate studies but it may be taken for either intermediate or advanced studies or completed as part of the postgraduate studies.

The following specifications and standardisation efforts have been taken into account during the production of Course Unit Realisation Data specification:

KURS	The course data work by TIEKE: http://www.vy.fi/data/files/extranet/tek_arkisto/tieke_kurssitieto_2003.pdf
M1	Degree, Study Module and Course Unit Data: http://www.vy.fi/standardit/M1/
ECTS	European Credit Transfer and Accumulation System: http://europa.eu.int/comm/education/programmes/socrates/ects_fi.html
ECTS-G	ECTS users' guide: http://europa.eu.int/comm/education/programmes/socrates/usersg_en.html
ISO 639	Language Codes See e.g. http://www.w3.org/WAI/ER/IG/ert/iso639.htm
ISO 8601	Date and Time Formats See e.g. http://www.w3.org/TR/NOTE-datetime
RFC 2045	MIME Media Types See http://www.iana.org/assignments/media-types/
RFC 2445	iCalendar See http://www.ietf.org/rfc/rfc2445.txt
DC	SFS 5895 Standard, the Finnish version of the Dublin Core Metadata Format, 2001

In addition, the following specification work has been closely monitored and applied to current specification where relevant:

CDM	Course Description Metadata See http://cdm.nou.no/
XCRI	ELF Course Information Group See http://www.elframework.org/projects/xcri
MACE	MACE – eduCourse and eduPerson http://middleware.internet2.edu/dir/

Specification of the Data Structure Terminology

Course Unit

The smallest study unit. Course units cannot be divided into smaller units i.e. they are atomic.

Some curricula or study guides use the term *course* in a similar meaning as the term *course unit* in the present data structure.

In practice, course units (courses) often include elements (e.g. exam, exercises) that are evaluated separately. In the present specification, course unit is taken to be one entity but parts of its realisation may be described using completion data and/or teaching offering data.

Course Unit Realisation

Course unit realisation is the basic unit of teaching, that is, it is an event tied to a specific time and location. Its name, time, location and often also its teacher and other participants are known. The teaching method used may be a lecture, tutorial, guided personal study, group work or independent study.

Some curricula or study guides use the term *course* in a similar meaning as the term *course unit realisation* in the present data structure.

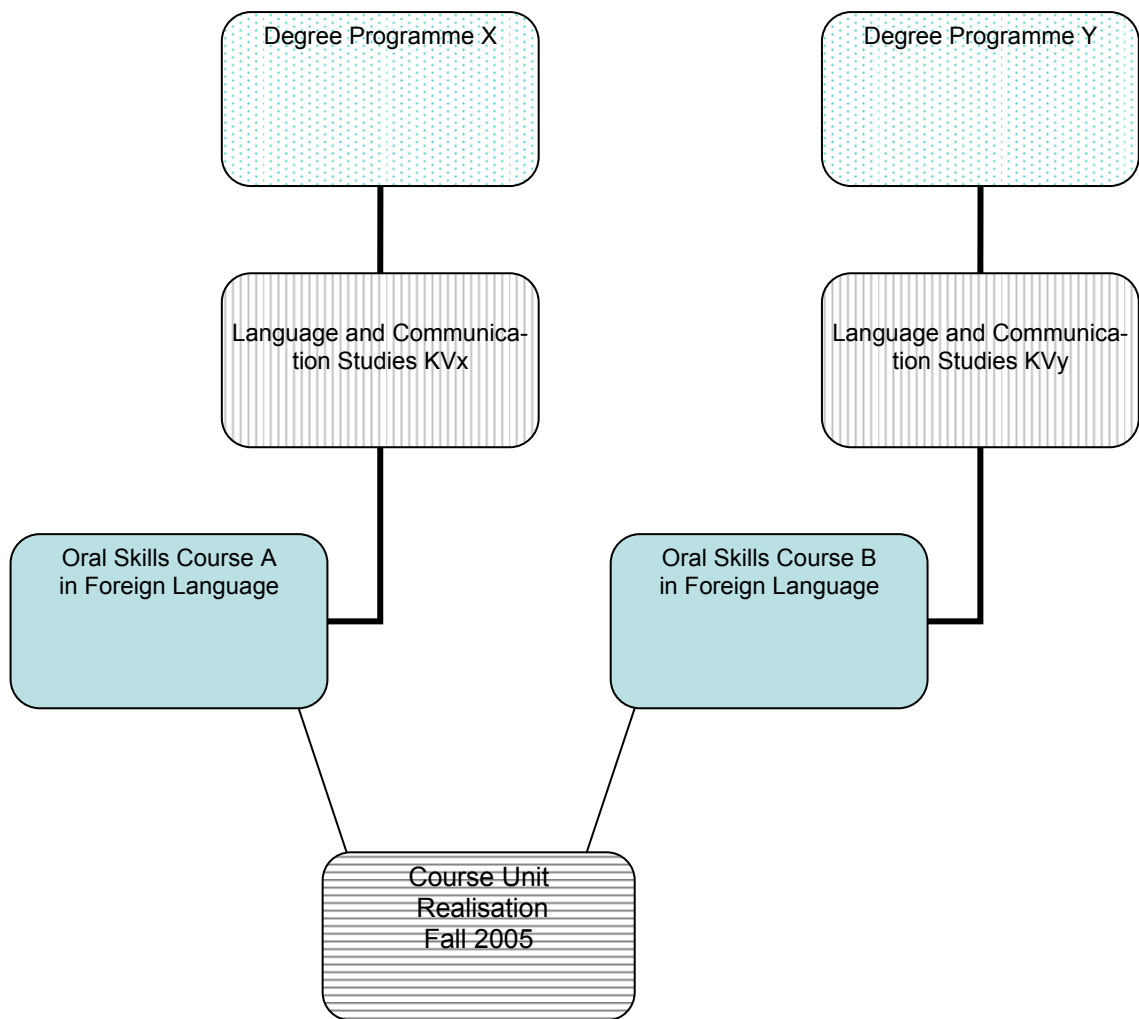


Figure 4. One course unit realisation may appear as a realisation of more than one course unit

The figure above illustrates a typical situation in which one course unit realisation may belong to several course units. An example: a course unit realisation 'Film History' offered at the University of Tampere during the academic year of 2005-2006 may belong to either A2, 'History of Media Culture', or A9, 'Project Studies' as part of the intermediate studies of the Media Culture.

Application Instructions

Encoding of the Data

The technical application method of the *Course Unit Realisation Data* specification may be flexible in details. The bindings (e.g. xml-bindings) made in the present specification document do not absolutely have to follow the structure (e.g. field = element) presented in the following tables but attributes may also contain the field data if that seems functional.

Language Versions

Each course unit realisation data structure to be transferred must contain information on language or languages used to complete text fields according to the following rule: if the field contents are available in one language, they must be available in other languages listed as well. In addition, the structure may include text fields in other languages where necessary. (For example, all text fields of the structure are in Finnish and, in addition, the course name is available in English).

Extensions

When exchanging data between different organisations, the fields and vocabularies of the present specification CANNOT be extended. The fields in the present data model should be used for the data interchange and modified (mapping) the potential university-specific vocabularies to match the vocabulary of the present data model. Within universities' internal systems extensions are possible.

The website supporting this specification is maintained in the FVU (Finnish Virtual University) portal at the address: www.vy.fi/standardit/M1/. The portal contains information (in Finnish) about the university-specific instructions for implementation, FAQs as well as procedures concerning the maintenance and updates of the present specification.

Grouping of the Fields

A listing of how the fields are divided into groups. A more detailed specification of each field is to be found in Appendix 1.

The fields have been divided into groups named 'General Information', 'Persons' and 'Organisations' because the data structure of *Degree, Study Module and Course Unit Data* [M1] specification uses a similar structure for Persons and Organisations data.

The order of fields is not relevant. In the General Information group, all subgroups are listed before the individual fields for clarity.

Course Unit Realisation

The fields used in Course Unit Realisation Data are arranged into following groups:

- General Information
- Persons
- Organisations

General Information Group

The General Information group includes the following subgroups (■) and fields (○):

- 1.1 Identifiers
 - 1.1.1 Organisation
 - 1.1.2 Realisation
 - 1.1.3 Course Unit
 - 1.1.4 Offering Information
- 1.2 Names
 - 1.2.1 Name
 - 1.2.2 Abbreviation
- 1.3 Language of Instruction
 - 1.3.1 Language
 - 1.3.2 Explanation
- 1.4 Credits
 - 1.4.1 Method of Measurement
 - 1.4.2 Default Value
 - 1.4.3 Minimum Value
 - 1.4.4 Maximum Value
 - 1.4.5 Explanation
- 1.5 Evaluation
 - 1.5.1 Grading Scale
 - 1.5.2 Explanation
- 1.6 Prerequisites
 - 1.6.1 Requirements
 - 1.6.2 Recommendations
 - 1.6.3 Price

- 1.7 Modes of Study
 - 1.7.1 Mode of Study
 - 1.7.2 Explanation
- 1.8 Teaching Methods
 - 1.8.1 Teaching Method
 - 1.8.2 Proportion of Web-Assisted Learning
 - 1.8.3 Explanation
- 1.9 Dates, Times and Locations
 - 1.9.1 Starting Date and Time
 - 1.9.2 Ending Date and Time
 - 1.9.3 Location
 - 1.9.4 Link
 - 1.9.5 Further Information
- 1.10 Registration Information
 - 1.10.1 Starting Date and Time
 - 1.10.2 Ending Date and Time
 - 1.10.3 Location
 - 1.10.4 Optionality
 - 1.10.5 Link
 - 1.10.6 Further Information
 - 1.10.7 Identifier
- 1.11 Key Words
 - 1.11.1 Identification Scheme
 - 1.11.2 Key Word
- 1.12 Types
 - 1.12.1 Type
 - 1.12.2 Explanation
- 1.13 Objectives
- 1.14 Content
- 1.15 Study Materials
- 1.16 Teachers
- 1.17 Web Page
- 1.18 Organisation Responsible
- 1.19 Accessibility
- 1.20 Date Issued
- 1.21 Further Information

Persons Group

The Persons group contains the following subgroups (■) and fields (○):

- 2.1 Person
 - 2.1.1 Identifier
 - 2.1.2 Title
 - 2.1.3 First Name
 - 2.1.4 Last Name
 - 2.1.5 E-mail
 - 2.1.6 Web Page
 - 2.1.7 Phone
 - 2.1.7.1 Number
 - 2.1.7.2 Explanation
 - 2.1.8 Organisations
 - 2.1.9 Further Information

Organisations Group

The Organisations group contains the following subgroups (■) and fields (○):

- 3.1 Organisation
 - 3.1.1 Identifier
 - 3.1.2 Organisation Name
 - 3.1.3 Unit
 - 3.1.4 Name Explanation
 - 3.1.5 Postal Address
 - 3.1.6 Street Address
 - 3.1.7 Phone
 - 3.1.7.1 Number
 - 3.1.7.2 Explanation
 - 3.1.8 Fax
 - 3.1.9 E-mail
 - 3.1.10 Web Page
 - 3.1.11 Persons
 - 3.1.12 Further Information

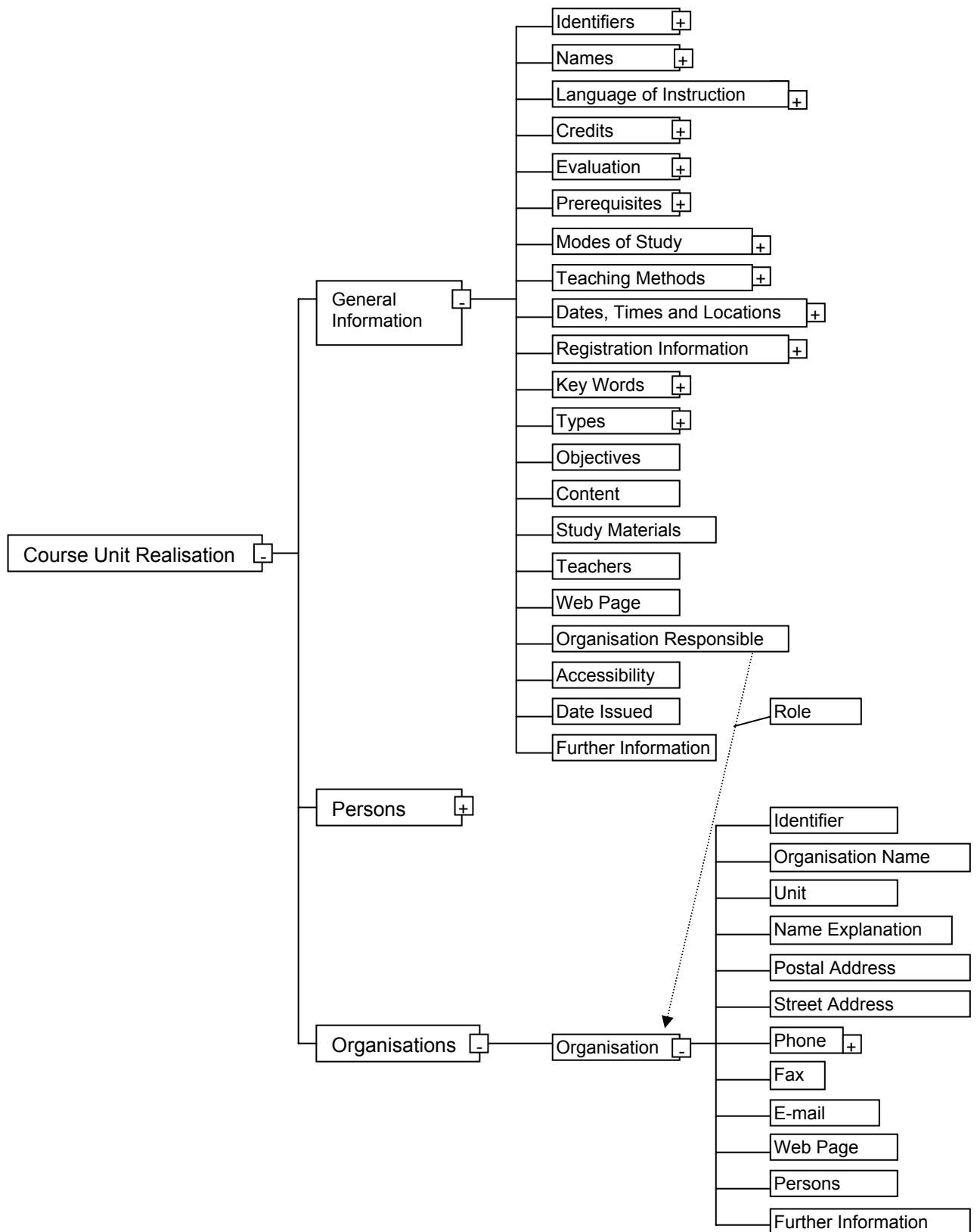


Figure 5. Organisation Responsible, voluntary Role = "principal organisation" or explanation using free text

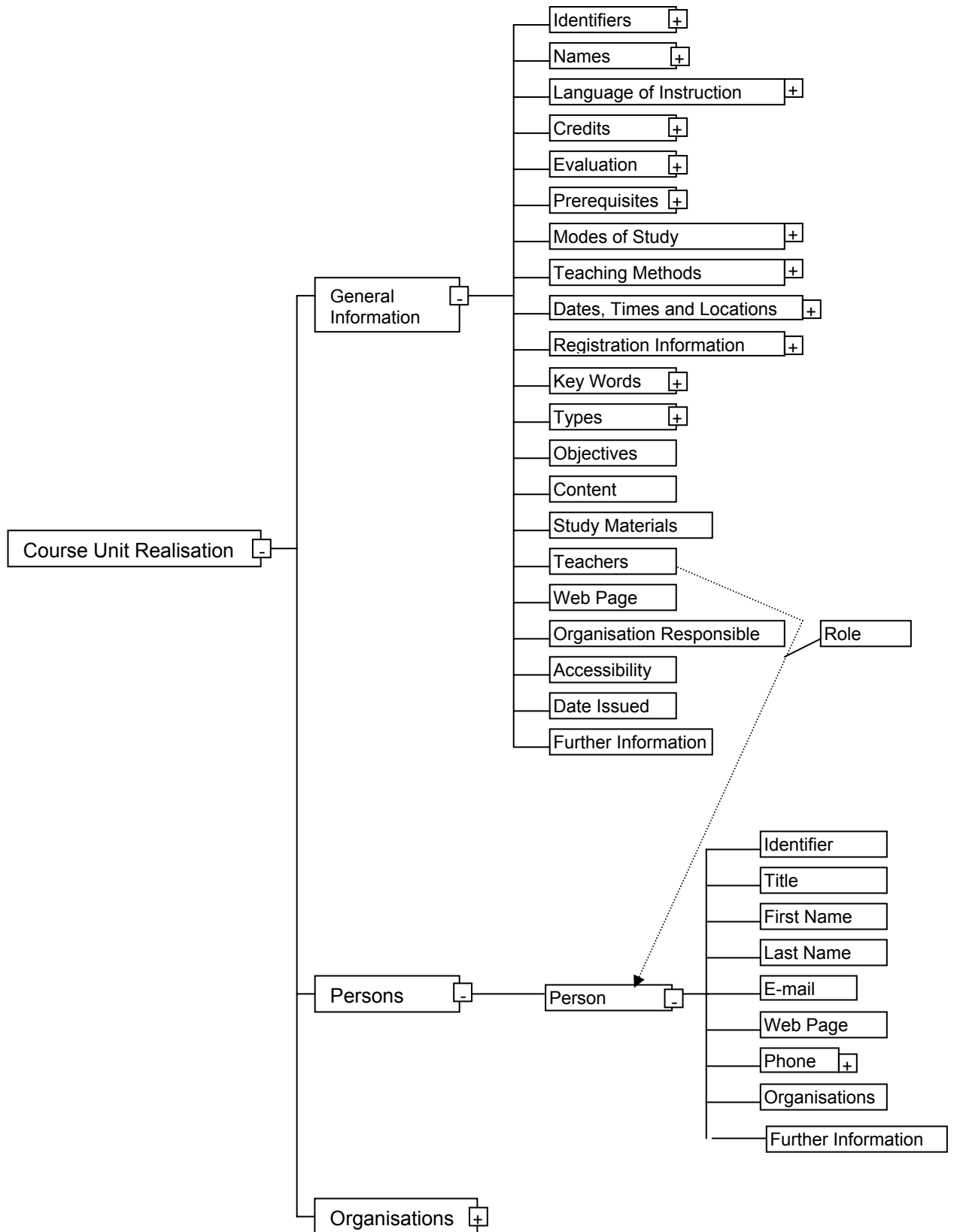


Figure 6. Teacher, voluntary Role = e.g. "teacher responsible" from the vocabulary or explanation using free text

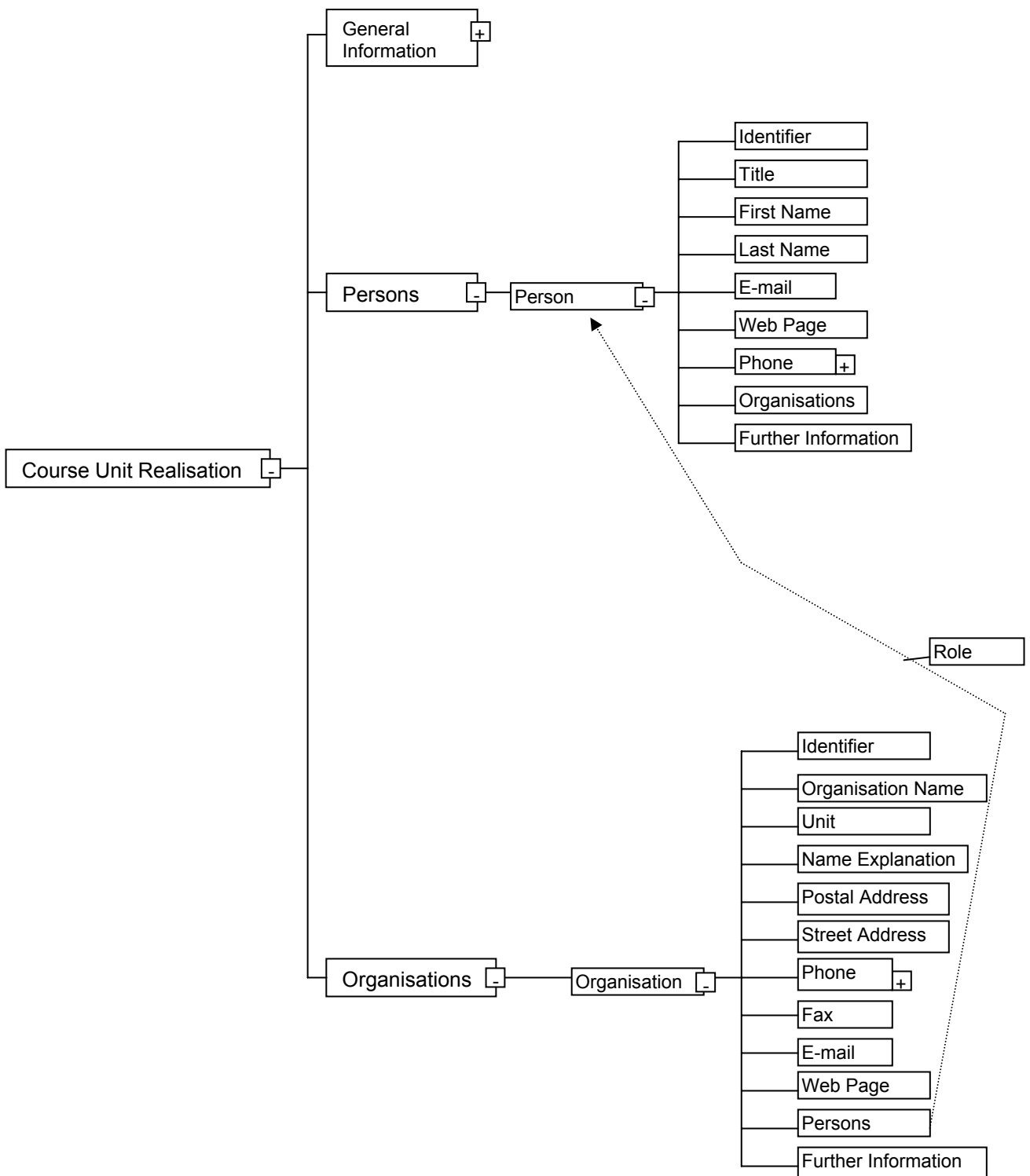


Figure 7. Persons of the organisation, voluntary Role = e.g. "contact person" from the vocabulary or explanation using free text

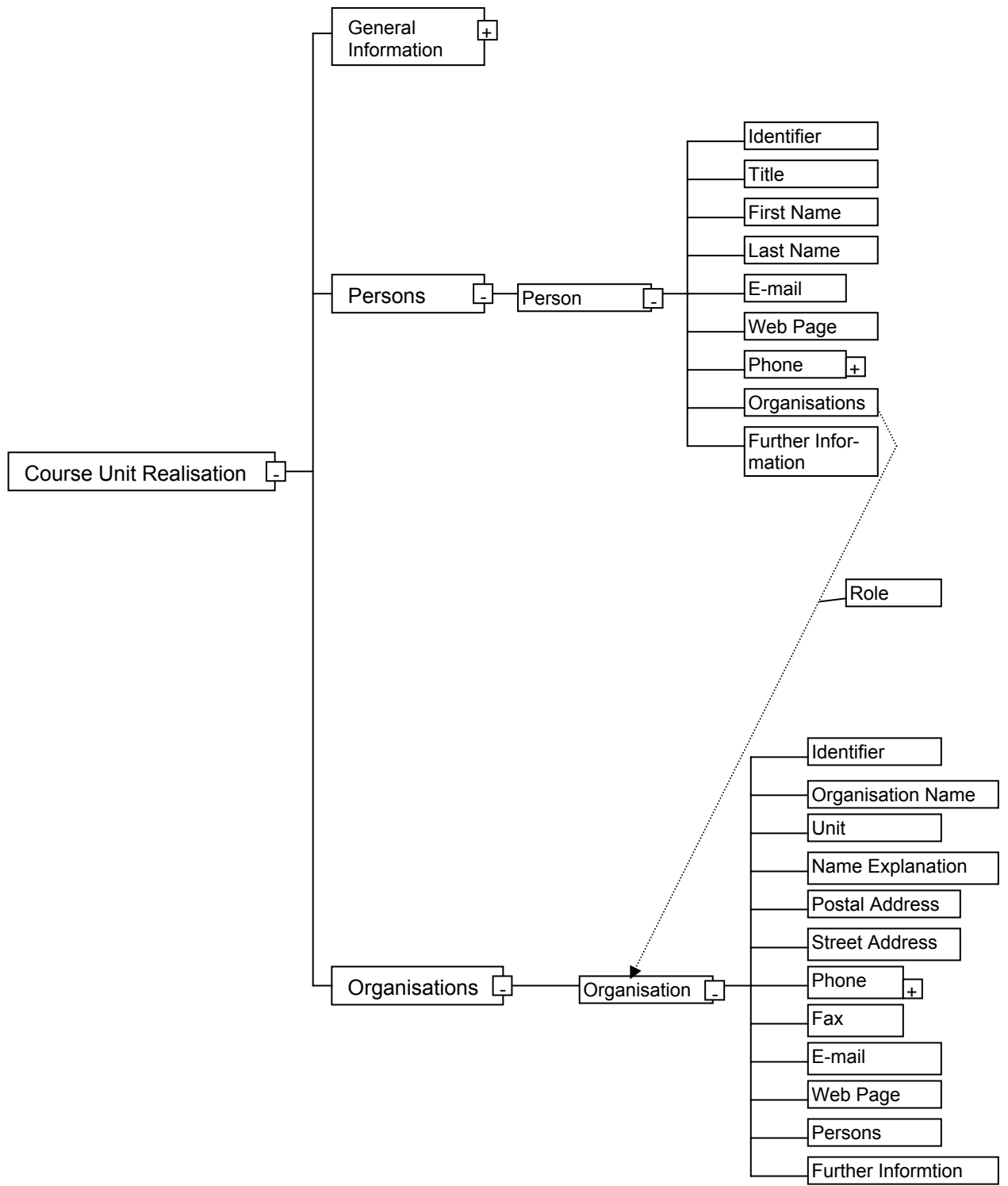


Figure 8. Person's organisation, voluntary Role = explanation using free text

Vocabulary

A complete vocabulary of the terms used is to be found in Appendix 1. In addition, the terms have been listed here so that their conceptualization would be easier.

Table 1:

Identifiers.Offering Information (1.1.4)

Flexible study right ('JOO') studies
Exchange studies

Credits.Method of Measurement (1.4.1)

ECTS credit
Credit

Evaluation.Grading Scale (1.5.1)

Pass
Numerical scale 0 - 5
Good / satisfactory
Approbatur - laudatur

If some other grading scale is to be used that should be described with free-text account in field 1.5.2 Explanation.

Registration Information. Optionality (1.10.4)

PRIORITY = 1 (Obligatory)

Types.Type (1.12.1)

Basic studies
Intermediate studies
Advanced studies
Language and communication studies
Internship
Postgraduate studies
Other study module

Table 2:

Requirements.Set of Requirements.Type (1.1.1)

Credits obtained
ECTS credits obtained
Number

Requirements.Set of Requirements.Value(Number) (1.1.1.1)

All
No

Requirements.Set of Requirements.Requirement.Objects.Object (1.1.2.3.1)

Open University students
Major subject students
Minor subject students
Postgraduate students

Table 3:

Recommendation.Objects.Object (1.2.1)

Open University students
Major subject students
Minor subject students
Postgraduate students

Table 4:

Modes of Study.Mode (1.1)

Written exam
Oral exam
Essay
Exercise(s)
Thesis / dissertation
Project / practical work
Internship
Portfolio
Study journal / learning diary
Participation in classroom work
Seminar
Competence-based examination

Modes of Study.Evaluation.Grading Scale (1.2.1)

Pass
Numerical scale 0 - 5
Good / satisfactory
Approbatur - laudatur

Modes of Study.Dates, Times and Locations.Optionality (1.3.4)

PRIORITY = 1 (Obligatory)

Table 5:

Teaching Methods.Method (1.1)

Lectures
Tutorials
Personal instruction
Group work
Independent work

Teaching Methods.Amount.Unit (1.2.1)

Hour
Percentage

Teaching Methods.Dates, Times and Locations.Optionality (1.3.4)

PRIORITY = 1 (Obligatory)

Table 6:

Material.Role (1.7)

To be examined
To be read beforehand
Supplementary material

Table 7:

Reference.Role (1.1)

Teacher
Teacher responsible
Tutor
Student
Support person
Contact person
Other person

One person may have several roles in which case more than one term should be chosen from the vocabulary. For example, a support person may be a network administrator, technical support or a teaching nurse. A person's role may be described also with free-text account in field 1.3 (Table 7).

Table 8:

Reference.Role (1.1)

Principal organisation

The term "principal organisation" may be used for distinguishing the organisation bearing the principle responsibility from other organisations participating in the course unit realisation. If

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only one organisation is affiliated with the course unit realisation, there is no need to use the term.

Appendix 1

The Appendix contains nine tables that will describe the data model used for the Course Unit Realisation specification. The basic structure of the specification is illustrated in Table 1. Tables 2-8 describe certain data types individually in an effort to limit the extent of Table 1.

The tables include groups and subgroups used only for grouping fields and subgroups. A dark grey background colour marks **groups** and lighter grey **subgroups**.

The 'Nr' column contains the digital identifier of the group or a field.

The 'Name' column contains the group or a field name.

The 'Explanation' column contains a short description of the group or field contents.

The 'Size' column contains information on the number of groups or fields the data structure allows.

The 'Optionality' column contains information on whether the group or a field is obligatory within the data structure. The obligatory groups and fields must be completed, but some groups or fields are alternative to other groups or fields.

The 'Order' column contains information on whether the order of groups or fields included in the data structure is relevant.

The 'Value Space' column contains the potential qualifiers of the datatype.

The 'Datatype' column contains information on the datatype of field contents.

The 'Examples' column contains examples of the field contents.

The 'Annotations' column contains possible further information on the field in question.

Appendix 1

Table 1 – Basic Structure

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1	General Information	General information on the course unit realisation.	1	Obligatory group	-	-	-	-	
1.1	Identifiers	A unique identifier of the course unit realisation and references to different course units.	1	Obligatory subgroup	-	-	-		
1.1.1	Organisation	The source of the identifier.	1	Obligatory	-	Identifiers of the Statistics Finland	Digit		
1.1.2	Realisation	The identifier of the current realisation.	1	Obligatory	-		Text		
1.1.3	Course Unit	The course unit identifier.	0 – n		No		Text		It is possible to refer to course units in the degree structure with this field. A reference can mean e.g. that students may acquire full amount of credits by taking the current course unit realisation.
1.1.4	Offering Information	Offering information.	0 – 2		-	Flexible study right ('JOO') studies Exchange studies	Vocabulary		
1.2	Names	The name and abbreviation of the course unit realisation.	1	Obligatory subgroup	-		-		
1.2.1	Name	The name of the course unit realisation.	1	Obligatory	-		Text		
1.2.2	Abbreviation	The possible abbreviation of the course unit realisation.	0 – 1		-		Text		
1.3	Language of Instruction	The language(s) of instruction used on the course unit realisation.	1 – n	Obligatory subgroup	No		-		
1.3.1	Language	Language code.	1	Obligatory	-	ISO 639	Text	"fin", "sve"	3-letter codes.
1.3.2	Explanation	A textual explanation of the language.	0 – 1		-		Text		

Appendix 1

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.4	Credits	Credit/ECTS credits awarded for completing the course unit realisation.	1 – 2	Obligatory subgroup	-	-	-	-	The credits may be expressed in both credits and ECTS credits.
1.4.1	Method of Measurement	The method of measurement applied.	1	Obligatory	-	ECTS credit Credit	Vocabulary		
1.4.2	Default Value	A numerical default value of credits.	1	Obligatory	-	ECTS credits are integers.	Digit		If there is no need to express the range of potential credits, only this field should be used.
1.4.3	Minimum Value	The potential minimum value of credits.	0 – 1		-		Digit		
1.4.4	Maximum Value	The potential maximum value of credits.	0 – 1		-		Digit		
1.4.5	Explanation	A textual explanation of the credits.	0 – 1		-		Text		
1.5	Evaluation	The evaluation criteria and the grading scale of the course unit realisation.	1	Obligatory subgroup	-	-	-		
1.5.1	Grading Scale	The final grading scale.	0 – 1	Obligatory, if one of the grading scales of the present vocabulary is used.	-	Pass Numerical scale 0 - 5 Good / satisfactory Approbatur - laudatur	Vocabulary		
1.5.2	Explanation	A textual explanation of the grading scale and evaluation criteria applied.	0 - 1	Obligatory, if one of the grading scales of the present vocabulary is not used.	-		Text	"5 = excellent, 4 = very good, 3 = good, 2 = satisfactory, 1 = sufficient and 0 = fail" "TT (satisfactory), HT (good) and ET (excellent)/ The examinations and course work will be graded using the numerical scale of 1-5 and the overall average of the course unit using TT, HT and ET."	It is possible that one course unit realisation appears as a realisation of two distinct course units with separate evaluation. In that case, an explanation should be provided using this field.
1.6	Prerequisites	The requirements and recommendations for taking the course unit realisation.	0 – 1		-		-		

Appendix 1

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.6.1	Requirements	Requirements for taking the course unit realisation.	0 – 1		-	See Requirements (Table 2)	Requirements		It is not possible to describe all potential requirements with requirement vocabulary as that would make it too complex as well as difficult to update. Other requirements than those in the vocabulary should be described with free text, e.g. "command of German".
1.6.2	Recommendations	Recommendations for taking the course unit realisation.	0 – n		No	See Recommendations (Table 3)	Recommendations	"Command of Latin."	The Requirements field should be used for describing required prior studies. This Recommendations field may be used in a more flexible manner for describing recommended earlier courses.
1.6.3	Price	The payment required.	0 – 5		-				
1.6.3.1	Amount	Price in digits.	0 – 1		-		Digit		Price in Euros.
1.6.3.2	Explanation	A textual explanation of the price.	0 - 1		-		Text		
1.7	Modes of Study	Modes of study available for completing the course unit realisation.	1	Obligatory subgroup	-	-	-		
1.7.1	Mode of Study	The distinct modes of study available.	1 - n	Obligatory	No	See Modes of Study (Table 4)	Mode of Study		
1.7.2	Explanation	A textual explanation of the modes of study.	0 - 1		-		Text	"An essay will be written based on subjects discussed in lectures and the self-study materials will be collected as a portfolio."	
1.8	Teaching Methods	Teaching methods used during the course unit realisation.	1	Obligatory subgroup	-	-	-		
1.8.1	Teaching Method	Teaching methods in use and their corresponding proportions.	1 - n	Obligatory	No	See Teaching Methods (Table 5)	Teaching Method		
1.8.2	Proportion of Web-Assisted Learning	The percentage of learning conducted using the Web.	0 - 1		-	Integer	Digit	"90"	The proportion of web-assisted learning is the total amount of web-assisted learning of the course unit realisation.

Appendix 1

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.8.3	Explanation	A textual explanation of the teaching method(s) used.	0 - 1		-		Text	"The exercises will be conducted as group work."	
1.9	Dates, Times and Locations	The planned dates, times and locations of the course unit realisation.	1	Obligatory	No				<p>Only the starting time and possibly the ending time of the course unit realisation should be included here. More exact dates and times are to be described using teaching method and modes of study data.</p> <p>The latest RFC-2445 XML proposition http://www.ietf.org/internet-drafts/draft-royer-calsch-xcal-03.txt will be used for XML bindings.</p> <p>Only parameters (properties) included in the "VEVENT" component are allowed.</p>
1.9.1	Starting Date and Time	The date and time the course unit realisation begins on.	0 - 1	Obligatory, if no further information is provided.	-		DATE-TIME		RFC-2445 parameter "DTSTART"
1.9.2	Ending Date and Time	The date and time the course unit realisation ends.	0 - 1				DATE-TIME		RFC-2445 parameter "DTEND"
1.9.3	Location	The location of the course unit realisation.	0 - 1		-		Text		RFC-2445 parameter "LOCATION"
1.9.4	Link	A link to date, time and location data.	0 - 1		-		URL		<p>RFC-2445 parameter "URL"</p> <p>N.B. This field should only be used for providing a link to the registration address. The link to the web page of the course unit realisation should be provided using the field 1.17 Web Page.</p>
1.9.5	Further Information	Further information on dates, times and locations.	0 - 1	Obligatory, if no starting date and time is provided.	-		Text		RFC-2445 parameter "DESCRIPTION"
1.10	Registration Information	The registration information of the course unit realisation.	0 - n		Yes, may be specified using "Priority" parameter.				<p>The latest RFC-2445 XML proposition http://www.ietf.org/internet-drafts/draft-royer-calsch-xcal-03.txt will be used for XML bindings.</p> <p>Only parameters included in the "VEVENT" component are allowed.</p>

Appendix 1

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.10.1	Starting Date and Time	The date and time the registration begins on.	0 - 1		-		DATE-TIME		RFC-2445 parameter "DTSTART"
1.10.2	Ending Date and Time	The registration deadline.	0 - 1				DATE-TIME		RFC-2445 parameter "DTEND"
1.10.3	Location	A location where registration takes place.	0 - 1		-		Text		RFC-2445 parameter "LOCATION"
1.10.4	Optionality	Whether registration for the course unit realisation is obligatory.	0 - 1		-	PRIORITY value 1 signifies obligatory and other values not obligatory.	Digit		RFC-2445 parameter "PRIORITY"
1.10.5	Link	A link to registration address.	0 - 1		-		URL		RFC-2445 parameter "URL" N.B. This field should only be used for providing a link to the registration address. The link to the web page of the course unit realisation should be provided using the field 1.17 Web Page.
1.10.6	Further Information	Further information on registration.	0 - 1		-		Text		RFC-2445 parameter "DESCRIPTION"
1.10.7	Identifier	A unique identifier	1	Obligatory	-		Text		RFC-2445 parameter "UID" Each "VEVENT" component must include this parameter.
1.11	Key Words	Terms facilitating the search or the classification of the course unit realisation.	0 - n		No		-		It is possible to provide key words from several identification schemes.
1.11.1	Identification Scheme	Identifier for the source (controlled vocabulary) of key words.	0 - 1		-		Text	"KOTA_xxx", "YSA"	If no controlled vocabulary is used, this field should be left blank. Listing identification schemes and their identifiers is not possible in the present document.
1.11.2	Key Word	A single term.	1 - n		No		Text		
1.12	Types	The types of course unit realisation.	0 - 1		-		-		The type of course unit realisation depends on the degree the student is taking. See also section "Relationship to Other Specifications and Standards".

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Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.12.1	Type	The type of course unit realisation.	0 - n		No	Basic studies Intermediate studies Advanced studies Language and communication studies Internship Postgraduate studies Other study module	Vocabulary		
1.12.2	Explanation	A textual explanation of the types.	0 - 1		-		Text		
1.13	Objectives	The objectives of the course unit realisation	1	Obligatory	-		Text		
1.14	Content	A description of the course unit contents.	1	Obligatory	-		Text		
1.15	Study Materials	The study materials used.	0 - n		No	See Materials (Table 6)	Material		
1.16	Teachers	Teachers of the course unit realisation.	0 - n		Yes. Will be indicated with the role referred to.	See Person Reference (Table 7)	Person Reference		The order of teachers is not relevant because e.g. the teacher responsible may be expressed using the Role field in Table 7.
1.17	Web Page	Web page of the course unit realisation.	0 - 1		-		URL		
1.18	Organisation Responsible	The organisation(s) responsible for the course unit realisation.	1 - n	Obligatory	Yes. Will be indicated with the role referred to.	See Organisation Reference (Table 8)	Organisation Reference		The order of organisations is not relevant because e.g. the principle organisation may be expressed using the Role field in Table 8.
1.19	Accessibility	Accessibility data concerning the course unit realisation.	0 - 1		-		Text	Information on accessibility in text format.	As the work carried out by TIEKE (Finnish Information Society Development Centre) on accessibility issues is still incomplete at the time, there are no exact instructions available for the use of this field. Further information (in Finnish) e.g. http://www.tieke.fi/tuotteet_ja_palvelut/estettomyys/

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Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.20	Date Issued	The date the course unit realisation data were published.	0 - 1		-	ISO 8601	Text		
1.21	Further Information	Additional information in text format that cannot be expressed using other fields.	0 - 1		-		Text		
2	Persons	The group contains information on the persons involved in the course unit realisation.	1	Obligatory group	-		-		
2.1	Person	An individual person's information.	1 - n	Obligatory	No		-		
2.1.1	Identifier	A unique identifier for the person within the current data structure.	1	Obligatory	-		ID		The purpose of the identifier is only to enable internal references within the data structure.
2.1.2	Title	Title or position.	0 - 1	Obligatory, if no names are provided.	-		Text	Adjunct Instructor, Professor, Lecturer in Subject Didactics	
2.1.3	First Name	First name or first names.	0 - 1	Obligatory, if no title is given.	-		Text		
2.1.4	Last Name	Last name.	0 - 1	Obligatory, if no title is given.	-		Text		
2.1.5	E-mail	An e-mail address	0 - 1		-		Text		
2.1.6	Web Page	A home page or other web page containing information on the person.	0 - 1		-		URL		
2.1.7	Phone	Phone numbers.	0 - 3		No		-		
2.1.7.1	Number	Phone number.	1		-		Text		

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Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
2.1.7.2	Explanation	A textual explanation of the phone number.	0 - 1		-		Text	"Work"	
2.1.8	Organisations	The organisation(s) the person works in.	0 - n		Yes. Will be indicated with the role referred to.		Organisation Reference		
2.1.9	Further Information	Information on the person that cannot be expressed using other fields.	0 - 1		-		Text		
3	Organisations	The group contains information on the organisation(s) involved.	1	Obligatory group	-		-		
3.1	Organisation	An individual organisation's information.	1 - n	Obligatory	No		-		
3.1.1	Identifier	A unique identifier of the organisation within the current data structure.	1	Obligatory	-		ID		The purpose of the identifier is only to enable internal references within the data structure.
3.1.2	Organisation Name	University or other organisation.	1	Obligatory	-		Text	"University of Tampere", "Company Ltd."	The organisational name data have been arranged hierarchically so that field 3.1.2 Organisation Name contains the name data and it can be specified with field 3.1.3 Unit and maximum of five Name Explanations in field 3.1.4.
3.1.3	Unit	Faculty or other information on the organisation name.	0 - 1		-		Text	"Faculty of Medicine", "Department of Product Development", "Unit of Teaching Technology"	The unit name is not obligatory but it is recommendable to provide all available information on names.
3.1.4	Name Explanation	Additional information on the name.	0 - 5		No		Text	"Department of Pathology", "Telecommunications Unit"	
3.1.5	Postal Address	Postal address	0 - 1		-				
3.1.5.1	Street						Text		
3.1.5.2	Postal Code						Text		

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Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
3.1.5.3	City						Text		
3.1.5.4	Country						Text		
3.1.6	Street Address	Street address	0 - 1		-		-		
3.1.6.1	Street						Text		
3.1.6.2	Postal Code						Text		
3.1.6.3	City						Text		
3.1.6.4	Country						Text		
3.1.7	Phone	Phone numbers	0 - 3		No		-		
3.1.7.1	Number	Phone number	1		-		Text		
3.1.7.2	Explanation	A textual explanation of the phone number.	0 - 1		-		Text	"Office"	
3.1.8	Fax	A fax number.	0 - 1		-		Text		
3.1.9	E-mail	An e-mail address.	0 - 1	Obligatory, if no Web Page or Persons are provided.	-		Text		
3.1.10	Web Page	A home page or other web page containing information on the organisation.	0 - 1	Obligatory, if no E-mail or Persons are provided.	-		URL		
3.1.11	Persons	Contact persons or other personnel of the organisation.	0 - n	Obligatory, if no E-mail or Web Page is provided.	Yes. Will be indicated with the role referred to.	See Person Reference (Table 7)	Person Reference		

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Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
3.1.12	Further Information	Information on the organisation that cannot be expressed using other fields.	0 - 1		-		Text		

The Requirements data model enables describing different combinations of requirements in a machine readable format.

Table 2 - Requirements

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1	Requirements	Requirement data.	1	-	-		-		
1.1	Set of Requirements	A subgroup grouping requirements.	0 - n	Obligatory, if no further information is provided.	No		-		
1.1.1	Type	The type of set of requirements.	0 - 1		-	Credits obtained ECTS credits obtained Number	Vocabulary		
1.1.1.1	Value	The value of the type of set of requirements.	0 - 1		-	Digits, "All" and "No" Value "All" will be used to express choosing all and value "No" the NO operator.			
1.1.2	Requirement	A requirement	0 - n		No				
1.1.2.1	Reference	A reference to prior studies.	0 - 1		-		Text		
1.1.2.2	Explanation	An explanation of the requirement.	0 - 1		-		Text		

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.1.2.3	Objects		0 - n		-				
1.1.2.3.1	Object	Separate objects.	0 - 1		-	Open University students Major subject students Minor subject students Postgraduate students	Vocabulary		
1.1.2.3.2	Explanation	A textual explanation of the object.	0 - 1		-		Text		The explanation may be used for specifying the right to participate and/or for describing objects not listed in the vocabulary.
1.1.3	Set of Requirements		0 - n		No		-		
1.1.4	Explanation	An explanation of the set of requirements.	0 - 1		-		Text		
1.2	Explanation	An explanation of the requirements.	0 - 1	Obligatory, if no set of requirements is provided.	-		Text		

Table 3 - Recommendations

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1	Recommendations	Information on recommendations.	1	-	-		-		
1.1	Earlier Studies	A reference to prior studies.	0 - 1	Obligatory, if no further information is provided.	-		Text		
1.2	Objects		0 - n		-				
1.2.1	Object	Separate objects.	0 - 1		-	Open University students Major subject students Minor subject students Postgraduate students	Vocabulary		
1.2.2	Explanation	A textual explanation of the object.	0 - 1		-		Text		The explanation may be used for specifying the right to participate and/or for describing objects not listed in the vocabulary.
1.3	Explanation	A textual recommendation or an explanation of the earlier studies recommended.	0 - 1	Obligatory, if no earlier studies are listed.	-		Text		

Table 4 – Modes of Study

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1	Modes of study	The modes of study available for completing the course unit realisation and related attributes concerning the evaluation and the date and time data.	1	-	-	-	-	-	
1.1	Mode		1	Obligatory	-	Written exam Oral exam Essay Exercise(s) Thesis / dissertation Project / practical work Internship Portfolio Study journal / learning diary Participation in classroom work Seminar Competence-based examination	Vocabulary		
1.2	Evaluation		0 - 1		-		-		
1.2.1	Grading Scale	The grading scale applied.	0 - 1		-	Pass Numerical scale 0 - 5 Good / satisfactory Approbatur - laudatur	Vocabulary		
1.2.2	Explanation	An explanation of the grading scale and evaluation criteria applied.	0 - 1		-		Text	"5 = excellent, 4 = very good, 3 = good, 2 = satisfactory, 1 = sufficient and 0 = fail" "TT (satisfactory), HT (good) and ET (excellent)/ The examinations and course work will be graded using the numerical scale of 1-5 and the overall average of the course unit using TT, HT and ET."	

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.3	Dates, Times and Locations	Dates, times and locations for the modes of study.	0 - n		-				The latest RFC-2445 XML proposition http://www.ietf.org/internet-drafts/draft-royer-calsch-xcal-03.txt will be used for XML bindings. Only parameters included in the "VEVENT" component are allowed.
1.3.1	Starting Date and Time	The date and time the mode of study begins on.	0 - 1	-	-		DATE-TIME		RFC-2445 parameter "DTSTART"
1.3.2	Ending Date and Time	The date and time the mode of study ends.	0 - 1				DATE-TIME		RFC-2445 parameter "DTEND"
1.3.3	Location	The location of the mode of study.	0 - 1		-		Text		RFC-2445 parameter "LOCATION"
1.3.4	Optionality	Whether the attendance is obligatory.	0 - 1		-	PRIORITY value 1 signifies obligatory and other values not obligatory.	Digit		RFC-2445 parameter "PRIORITY"
1.3.5	Link	A link to date, time and location data.	0 - 1		-		URL		RFC-2445 parameter "URL" N.B. This field should only be used for providing a link to the registration address. The link to the web page of the course unit realisation should be provided using the field 1.17 Web Page.
1.3.6	Further Information	Further information on date, time and location.	0 - 1		-		Text		RFC-2445 parameter "DESCRIPTION"
1.3.7	Recurrence Set	A recurrence set of reoccurring realisations.	0 - 1			See pages 34 and 38 http://www.ietf.org/rfc/rfc2445.txt	DATE-TIME, TIME, PERIOD	RDATE;VALUE=PERIOD: 19960403T020000Z/ 19960403T040000Z, 19960404T010000Z/PT3H RDATE;VALUE=DATE: 19970101,19970120,19970217,19970421,19970526,19970704,19970901,19971014,19971128,19971129,19971225	RFC-2445 parameter "RDATE"

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.3.8	Recurrence Rule	The recurrence rules for reoccurring realisations.	0 - 1			See page 40 http://www.ietf.org/rfc/rfc2445.txt	RECUR	RRULE:FREQ=YEARLY;UNTIL=20000131T090000Z; BY-MONTH=1;BYDAY=SU,MO,TU,WE,TH,FR,SA RRULE:FREQ=MONTHLY;INTERVAL=18;COUNT=10;BYMONTHDAY=10,11,12,13,14,15	RFC-2445 parameter "RRULE" When both Recurrence Set and Recurrence Rule appear together, the recurring events are defined by the union of occurrences defined by both the "RDATE" and "RRULE".
1.3.9	Exception Date	The exception dates of the recurrence instances.	0 - 1				DATE-TIME	EXDATE:19960402T010000Z,19960403T010000Z,19960404T010000Z	RFC-2445 parameter "EXDATE"
1.3.10	Recurring Exception Rule	The recurring exception rules of the recurrence instances.	0 - 1			See page 40 http://www.ietf.org/rfc/rfc2445.txt	RECUR	EXRULE:FREQ=YEARLY;COUNT=8;BYMONTH=6,7	RFC-2445 parameter "EXRULE"
1.3.11	UID	A unique identifier of the date, time and location data.	1	Obligatory	-		Text		RFC-2445 parameter "UID" Only parameters included in the "VEVENT" component are allowed.
1.4	Explanation	A textual explanation of the modes of study.	0 - 1		-		Text		

Table 5 – Teaching Methods

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1	Teaching Methods	The teaching method and related value attributes.	1	-	-	-	-	-	
1.1	Realisation		1	Obligatory	-	Lectures Tutorials Personal instruction Group work Independent work	Vocabulary		
1.2	Amount	The proportion of the teaching method in hours or percentages.	0 - 1		-		-		
1.2.1	Unit	The unit used.	1		-	Hour Percentage	Vocabulary	"Percent"	
1.2.2	Value	The numerical value of the amount.	1		-		Digit	"50"	
1.3	Dates, Times and Locations	Dates, times and locations of the teaching methods used.	0 - n		-				The latest RFC-2445 XML proposition http://www.ietf.org/internet-drafts/draft-royer-calsch-xcal-03.txt will be used for XML bindings. Only parameters included in the "VE-VENT" component are allowed..
1.3.1	Starting Date and Time	The date and time the teaching method begins on.	0 - 1	-	-		DATE-TIME		RFC-2445 parameter "DTSTART"
1.3.2	Ending Date and Time	The date and time the teaching method ends.	0 - 1				DATE-TIME		RFC-2445 parameter "DTEND"
1.3.3	Location	The location of the teaching method used.	0 - 1		-		Text		RFC-2445 parameter "LOCATION"
1.3.4	Optionality	Whether the attendance is obligatory.	0 - 1		-	PRIORITY value 1 signifies obligatory and other values not obligatory.	Digit		RFC-2445 parameter "PRIORITY"

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.3.5	Link	A link to date, time and location data.	0 - 1		-		URL		RFC-2445 parameter "URL" N.B. This field should only be used for providing a link to the registration address. The link to the web page of the course unit realisation should be provided using the field 1.17 Web Page.
1.3.6	Further Information	Further information on dates, times and locations.	0 - 1		-		Text		RFC-2445 parameter "DESCRIPTION"
1.3.7	Recurrence Set	A recurrence set of reoccurring realisations.	0 - 1			See pages 34 and 38 http://www.ietf.org/rfc/rfc2445.txt	DATE-TIME, TIME, PERIOD	RDATE;VALUE=PERIOD: 19960403T020000Z/ 19960403T040000Z, 19960404T010000Z/PT3H RDATE;VALUE=DATE: 19970101,19970120,19970217,19970421,19970526,19970704,19970901,19971014,19971128,19971129,19971225	RFC-2445 parameter "RDATE"
1.3.8	Recurrence Rule	The recurrence rules for reoccurring realisations.	0 - 1			See page 40 http://www.ietf.org/rfc/rfc2445.txt	RECUR	RRULE:FREQ=YEARLY;UNTIL=2000131T090000Z; BY-MONTH=1;BYDAY=SU,MO,TU,WE,TH,FR,SA RRULE:FREQ=MONTHLY;INTERVAL=18;COUNT=10;BYMONTHDAY=10,11,12,13,14,15	RFC-2445 parameter "RRULE" When both Recurrence Set and Recurrence Rule appear together, the recurring events are defined by the union of occurrences defined by both the "RDATE" and "RRULE".
1.3.9	Exception Date	The exception dates of the recurrence instances.	0 - 1				DATE-TIME	EXDATE:19960402T010000Z,19960403T010000Z,19960404T010000Z	RFC-2445 parameter "EXDATE"
1.3.10	Recurring Exception Rule	The recurring exception rules of the recurrence instances.	0 - 1			See page 40 http://www.ietf.org/rfc/rfc2445.txt	RECUR	EXRULE:FREQ=YEARLY;COUNT=8;BYMONTH=6,7	RFC-2445 parameter "EXRULE"
1.3.11	UID	A unique identifier of the date, time and location data.	1	Obligatory	-		Text		RFC-2445 parameter "UID" Each "VEVENT" component must include this parameter.

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.4	Explanation	A textual explanation of the teaching methods used.	0 - 1		-		Text		

The fields 1.1 – 1.6 used for describing materials conform to the Dublin Core [DC] Metadata format. The following elements of the DC format have been omitted: subject, contributor, format, type, source, language, relation, coverage and rights. The fields 1.7 and 1.8 are extensions to the DC format made by the current specification.

N.B. The present specification is not meant for the explicit description of the material's metadata or for the data interchange. It is, however, recommendable to refer to such metadata if they are available in some information resource.

Table 6 - Materials

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1	Material	Information on materials.	1		-		-		
1.1	Identifier	Un unambiguous reference to the material.	0 - 1	Obligatory subgroup, if no other data are provided	-		-		If the identifier refers to external metadata, there is no need to use other fields of the current table.
1.1.1	Identification Scheme	The identification scheme applied.	1	Obligatory, if an identifier is used.	-		Text	"ISBN", "URI"	Formal identification scheme is "URL" if reference is to external metadata.
1.1.2	Identifier	The identifier or a link of the material.	1	Obligatory, if an identifier is used.	-		Text	"951-45-1234-1", "http://yliopisto.fi/om-haku?id=123456"	This field can be used for providing a link e.g. to a bibliographic data.
1.2	Title	A name given to the material by the creator or publisher.	0 - 1		-		Text		
1.3	Creator	The person or organisation primarily responsible for making the content of the material.	0 - 1		-		Text		

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1.4	Publisher	The organisation, person who has published or made the material available.	0 - 1		-		Text		
1.5	Date Issued	The date of the publication of the material.	0 - 1		-	ISO 8601	Text		The element equals the "Date" element in DC with element refinement "Issued"
1.6	Description	An account of the content of the material. N.B. This field should be used for describing the contents of the material. The usage of material in the course unit realisation is described in field 1.8 Further Information.	0 - 1		-		Text		
1.7	Role	The material's role in the course unit realisation.	0 - 1		-	To be examined To be read beforehand Supplementary material	Vocabulary		The current field is used for describing the material's role only in the current course unit realisation.
1.8	Further Information	Information on the material that cannot be expressed using other fields.	0 - 1		-		Text		

Table 7 – Person Reference

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1	Reference	A reference to a person.	1		-		-		
1.1	Role	The role of the object referred to.	1 - 6	Obligatory	-	Teacher Teacher responsible Tutor Student Support person Contact person Other person	Vocabulary		
1.2	Object	The object referred to. N.B. The identifiers referred to are listed in field 2.1.1	1	Obligatory	-		IDREF		
1.3	Explanation	A textual explanation of the reference. This field may be used e.g. for describing the role of 'Other person' in field 1.1.	0 - 1		-		Text		

Table 8 – Organisation Reference

Nr	Name	Explanation	Size	Optionality	Order	Value Space	Datatype	Example	Annotations
1	Reference	A reference to an organisation.	1		-		-		
1.1	Role	The role of the object referred to.	0 - 1		-	Principal organisation	Vocabulary		
1.2	Object	The object referred to. N.B. The identifiers referred to are listed in field 3.1.1	1	Obligatory	-		IDREF		
1.3	Explanation	A textual explanation of the reference This field may be used for describing the other potential roles of the organisation except the bearer of the principal responsibility as suggested by the vocabulary.	0 - 1		-		Text		