

ECLAS Guidance on Landscape Architecture Education

**The Tuning Project
ECLAS – LE:NOTRE**

Report: Tuning Landscape Architecture Education in Europe

Status: Version 27

Report commissioner: LE:NOTRE project of ECLAS

Coordinator LE:NOTRE: Richard Stiles
www.le-notre.org

Authors : Diedrich Bruns, University of Kassel, Germany
Veli Ortacesme, University of Antalya, Turkey
Richard Stiles, Technical University of Vienna, Austria
Jeroen de Vries, University of Applied Studies Larenstein,
The Netherlands
Robert Holden, Greenwich University, UK
Karsten Jorgensen, University of Life Science, Aas, Norway.

The experience and inputs of the LENNE Project members also contributed to this document.

Date: October 2010

CONTENTS

Foreword	7
Executive Summary	9
1. Introduction	12
1. 1. Introduction to Tuning	12
1. 2. Introduction to landscape architecture	13
2. Landscape Architecture Core Competences	15
3. Generic Competences in Landscape Architecture	16
4. Subject Specific Competences	19
4. 1. Theory and Methodology in Landscape Architecture	20
4. 2. Planning, Design and Management	21
4. 2. 1. Landscape Design, Strategic Landscape Planning, Landscape Management	21
4. 2. 2. Urban Open Space Planning (and Policy)	23
4. 2. 3. Interpretation and Conservation/Management of Cultural Landscapes	24
4. 2. 4. Conservation/Management of Parks and Gardens	25
4. 2. 5. Planning/Design for Infrastructure Projects (and Landscape Impacts)	26
4. 3. Vegetation and Materials	28
4. 3. 1. Materials and Construction Techniques	28
4. 3. 2. Vegetation Establishment and Plant Materials	28
4. 4. Information Technology in Landscape Architecture	29
4. 5. Professional Practice of Landscape Architecture	30
5. Landscape architecture education and degrees	31
5. 1. Introduction to educational cycles	31
5. 2. First cycle programmes	32
5. 3. Entry criteria to 2nd cycle programmes and transfer from 1st to 2nd cycle	33
5. 4. Second cycle programmes	35
5. 5. Conversion Masters	35
5. 6. Part time degree programs	36
5. 7. Third cycle programmes	37
5. 8. Titles of degrees	38
6. Learning, Teaching and Assessment	39
6. 1. Learning and teaching modes	39
6. 2. Assessment strategy for landscape architecture education	40
7. Quality Assurance for landscape architecture programmes	41

Appendices 44

Appendix A: Glossary Tuning for Landscape Architecture	44
Appendix B: Development of landscape architecture as an academic discipline	50
Appendix C. European Credit Transfer System, ECTS	52
Appendix D. Dublin descriptors for 1st, 2nd and 3rd cycle programs	54
Appendix E. Guidelines for accreditation and validation of landscape programmes	55
Appendix F. Professional Recognition and Accreditation of Landscape Architecture Degrees	58

List of Figures

Fig. 1: Ranking of importance of generic competences (as listed by LE:NOTRE working groups)	17
Fig. 2: Additional generic competences (as listed by LE:NOTRE survey)	17
Fig. 3: Core Competences and Subject Specific Competences in Landscape Architecture	21
Fig. 4: Guidelines for accreditation and validation of landscape architecture programmes	42
Fig. 5: The Tuning Dynamic Quality Development Circle (Source: Tuning 2005 pages 112/113)	55

FOREWORD

Tuning Educational Structures in Europe accompanies the Bologna process and implements its principles at curriculum level. The Tuning project was carried out by academics that work at institutes of higher education. For the field of landscape architecture this is done as part of the project called “New Opportunities for Teaching, Research and Education, LE:NOTRE”. The LE:NOTRE project is a European Thematic Network in the field of landscape architecture. It is organised by the European Council of Landscape Architecture Schools, ECLAS.

This document “Tuning Landscape Architecture Education in Europe” is meant to provide terms of reference for teaching and learning at institutes of higher education in the field of landscape architecture. It describes the field of landscape architecture and its areas of knowledge and expertise. It is intended that this document will also be used by the community of practice of landscape architects and by stakeholders in the profession such as governmental organisations, commissioners, employers and non-governmental bodies. In the long run the publication of a “Landscape Architecture Education Guidance” might also serve as reference for programme accreditation and professional recognition.

This document should be read as a basis for a continuing process. It is not presented as the ultimate and final definition of what the discipline of landscape architecture should be. Rather, it is meant to be used as guidance and as an enabling framework that provides inspiration to promote landscape architecture education, and as a basis to continue to improve learning and teaching approaches, and also to gain new insights through research.

This document is the result of the work of many academics in the field of landscape architecture. Parts were prepared during the various stages of the LE:NOTRE 1, LE:NOTRE Dissemination and LE:NOTRE 2 projects. In 2003 a survey was carried out for the ranking of the competences for landscape architecture. We would like to thank all who participated in the definition of areas of knowledge, especially the working group coordinators and the persons who performed specific tasks for part of the Tuning process.

Special thanks go to:

Professor Carl Steinitz and Graham Fairclough, members of the Scientific Advisory Board of LE:NOTRE 2, for their critical support;

Professor Meto Vroom, Professor Dusan Ogrin and Professor Olaf Skage, members of the Scientific Advisory Board of LE:NOTRE for their critique and recommendations on the first draft;

Robert Holden of Greenwich University, and of EFLA, for contributing to the chapter on Professional Recognition.

The responsibility for the content of this document lies with the LE:NOTRE Steering Committee:

Simon Bell, Edinburgh School of Arts (UK)
Bernadette Blanchon, ENSP Versailles (FR)
Diedrich Bruns, University of Kassel (DE)
Erich Buhman, FH Anhalt (DE)
Jasminka Cjevic, University of Belgrade (RS)
Ellen Fetzer, FH Nürtingen (DE)
Davor Gazvoda, University of Ljubljana (SI)
Karsten Jørgensen, University of Life Science (NO)
Nilgöl Karadeniz, University of Ankara (TR)
Arie Koster, Van Hall Larenstein (NL)
Harlind Libbrecht, Hogeschool Gent (BE)
Francesca Mazzino, University of Genova (IT)
Frederico Meireles, Vila Real, UTAD - University of Trás-os-Montes and Alto Douro (PT)
Elke Mertens, University of Neubrandenburg (DE)
Alexandre Moisset, ENSP Bordeaux (FR)
Veli Ortacesme, University of Antalya, Turkey
Ingrid Sarlöv-Herlin, Swedish Agricultural University (SE)
Richard Stiles, Technical University Vienna (AT)
Kinga Szilagy, Corvinus University (HR)
Jeroen de Vries, Van Hall Larenstein (NL)
Kristine Vugule, Agricultural University (LT)
Przemyslaw Wolski, Warsaw University of Life Sciences (PL)

The work of many Network members contributed to the definition of generic and subject specific competences during the course of the project. Their contribution amount to many ours of diligent work, and without this input this document would not be possible.

EXECUTIVE SUMMARY

Purpose of this Tuning Document

With the aim to assure high educational qualities, and to build stronger or new programmes, a guidance document for landscape architecture education is proposed: it describes knowledge, skills and competences that are specific to landscape architecture. By providing points of reference, convergence and common understanding this guidance may also serve as a framework of reference for programme accreditation and professional recognition. Within this framework individual schools develop specific profiles.

Landscape Architecture

Landscape architecture as a field of professional activity, and an academic discipline, is concerned with the shaping of landscapes at various scales. Core competences of landscape architecture centre on the process of intervention in landscapes to create new or revitalised places, by means of landscape planning, design and management, as well as by project implementation. Aims are to create, enhance, maintain, and protect places so as to be functional, aesthetically pleasing, meaningful and sustainable and appropriate to diverse human needs and goals. Landscape architects must have a holistic knowledge and understanding of landscape in time and space, and the pressures and driving forces to which landscapes are subjected; they involve not only specialist knowledge from a wide range of disciplines, but also the interests of the public.

Knowledge, Skills, and Competences

Through ECLAS all landscape architecture schools agree to define knowledge, skills and competences that students acquire during their education. While some competences define the core of landscape architecture education, individual schools prescribe their particular educational and research profile: they are stating where they are placing an emphasis, and which competences will mainly be developed from one cycle to the next. In doing so, schools may refer to subject specific and generic competences that have been catalogued during the Tuning process of the LE:NOTRE project. (This catalogue will be revised as needed). Landscape architecture is concerned with all types of landscape; however, students may wish to become experts in particular areas of special interest.

Educational cycles

The Bologna Agreement defines **3 educational cycles**¹

- 1st cycle programmes
- 2nd cycle programmes
- 3rd cycle = PhD / Doctorate (programmes)

¹ Compatible with levels 5-8 of the European Qualifications Framework For Lifelong Learning, EQF.

Completing a workload of 300 credits (ECTS), graduates may be eligible to apply for PhD / Doctorate programmes². 300 credits may be collected in

- consecutive 1st and 2nd cycle programmes,
- integrated programmes where 1st and 2nd cycles are combined;
- Conversion Master Programmes.

Schools define entry requirements for their programmes. Students may be admitted to integrated or to 2nd cycle programmes (a) after successfully completing the 1st cycle and (b) by fulfilling a defined set of admission criteria (grades, transfer credits, etc.). Suitable “intake moments” have to be defined for admitting undergraduate students to integrated programmes. Graduates of 1st cycle programmes from neighbouring disciplines may enter consecutive and integrated landscape architecture programmes (a) after having been evaluated against a set of performance criteria (measured e.g. by possessing specific competences), (b) successfully completing defined conversion courses / modules (e.g. in areas they do not pass during evaluation)³, and (c) by fulfilling a defined set of admission criteria (grades, transfer credits, etc.). Conversion Master Programmes are designed - specific curricula, longer duration / greater workload – to serve highly qualified graduates from neighbouring disciplines to earn a 2nd cycle degree in landscape architecture (admission and performance criteria as above).

As students rise from one level of academic and professional education to the next they will change perspectives: after a period of socialisation into landscape architecture, students will increasingly gain autonomy in developing existing approaches further and, in the “world of critical scholarship and creative practice”, take on the role of leadership in reconsidering and shaping the field (cf. Steinitz 1990 in *Landscape Journal*; and European Qualification Framework):

- 1st cycle programmes are comprehensive and include education in core competences specific to landscape architecture, with options to emphasise some subject specific competences. Students gain a critical understanding of theories and principles of landscape architecture; they will be able to develop creative solutions to complex and unpredictable problems.
- 2nd cycle programmes emphasise one or more of landscape architecture’s core and subject specific competences. Students are starting to gain autonomy to develop new approaches enabling them to make original contributions to professional knowledge and practice, some at the forefront of advancement in the field, and at the interface between fields. Some programmes may focus on developing research skills; others may focus on professional development.
- 3rd cycle programmes and doctoral studies serve the advancement of knowledge through original research (Bergen Communiqué of 2005). Doctoral students demonstrate substantial authority in reconsidering different theories, methodologies and approaches, thereby reshaping landscape architecture in work and study

² Four year, 240 credit undergraduate programmes meet standard requirements of professional accreditation. Different (and usually additional) requirements may exist in individual European countries for professional recognition, and for receiving a professional license.

³ It is possible that applicants also gain competency through self-study or working in practice.

Learning and teaching modes

Studio learning is at the centre of landscape architecture education: 40 to 60% of student's workload is reserved for studio based learning. Students work either individually or in small groups to develop design and planning approaches, to train in communication and to gain management skills, to apply a number of different techniques and technologies, etc. Schools are responsible for providing resources needed for studio teaching; this includes sufficient consultation and tutoring capacity, adequate studio rooms, resources to train IT related skills and competences, workshops for model building, and others.

Around the studio a set of other teaching modes are arranged to support specific learning processes. These consist of lectures, seminars, and field trips. During field trips (excursions) landscape architecture students develop a set of references for their own work. Time in the field is also needed to enable students to personally collect data and information. Landscape architects must be able to perform their own landscape analysis and, ideally, landscape assessment is based on immediate exposure to the landscape. Lectures and seminars are important for instruction on the use and selection of methods. For preparing and writing a paper, or a thesis, teaching assumes the form of a tutorial (mostly done on a one to one basis).

To acquire professional competences internships should be included into landscape architecture programmes. Experience gained during periods of practical training outside of the university should be reflected upon, for example by writing a term paper, or by preparing a report.

The Next Steps

After adopting this document by voting, and after having received official recognition for its own guidance, ECLAS will be in a position to advise accreditation bodies, and administrators, who are designing and considering the development of new programmes, the review of existing programmes, and the resources allocated to them. It is expected that, after due consideration, this document will be accepted by responsible EU bodies.

By using the guidance document prepared during Tuning, the co-operation between ECLAS and EFLA in supporting programme development and recognition will be enhanced. Based on this guidance agreements between schools may be substantiated and a trust be built to recognise credits earned at ECLAS schools. Schools are advised to apply national and international rules flexibly. Most important are staff and students who are developing competences in intercultural communication and cooperation.

Members of ECLAS are invited to continue and discuss the application of this guidance document, to review its details, and to suggest what may be needed to continue to develop landscape architecture education in Europe.

1. INTRODUCTION

1. 1. Introduction to Tuning

The European Union's 'Tuning Project' aims to provide a practical framework to implement the Bologna Process. The name 'Tuning' was chosen for the project to reflect the idea that universities would be interested in having points of reference, convergence and common understanding for developing their degree programmes; they would not look for a kind of harmonisation that leads to making unified, prescriptive or definitive European curricula. The Tuning Project implies that greater comparability and transparency should be achieved through a 'bottom-up' dialogue, held between the academics involved in teaching and developing the subject area at Europe's universities. The common points of reference are developed and agreed jointly by academics within each of the disciplines concerned.

In the framework of the Tuning Project five 'lines' are distinguished to organise discussions in participating subject areas:

1. Generic competences of transferable skills,
2. Subject-specific competences,
3. The role of ECTS as an accumulation system,
4. Approaches to learning, teaching and assessment ,
5. The role of quality enhancement in the educational process.

Through the LE:NOTRE Project, landscape architecture is one of the core members of the Tuning Project. Generic competences for landscape architecture were agreed on during the course of the first phase of the LE:NOTRE Project. In addition, a first draft of a catalogue of subject specific competences was also prepared. LE:NOTRE TWO is taking this process forward. Competences have been defined with reference to the variety of different programmes in landscape architecture education; a framework of reference for teaching approaches, assessment methods and quality assurance has also been described. By including the so-called 'third Bologna Cycle' - the doctorate degree - strong synergy effects are achieved with the third theme of LE:NOTRE TWO: Strengthening the links between teaching and research.

In April 2008 the Council of Europe and the European Union signed the document of the European Qualification Framework (EQF) which serves as a reference for national qualifications frameworks and systems. It is advised that as of 2010 national diplomas refer to the levels of the EQF.

1. 2. Introduction to landscape architecture

Landscape architecture and society

Landscape architecture, as a field of professional activity, and an academic discipline, is concerned with the shaping of landscapes at various scales. It **involves landscape planning, design and management** to create, enhance, maintain, and protect places so as to be functional, aesthetically pleasing, meaningful and sustainable and appropriate to diverse human needs and goals. The multifaceted nature of landscapes and mankind's interaction with them makes this subject area one of great scope. Hence, in developing its field, landscape architecture draws on and integrates concepts and approaches, not only from both sides of the traditional divide between the creative arts and the natural sciences, but also incorporates many aspects of the humanities and a wide range of technologies.

According to the European Landscape Convention "Landscape" means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors;" It is thereby both the subject and the object of planning, design and management. Landscape architecture is concerned with all types of landscape. This includes rural, urban and 'peri-urban' landscapes. Landscape proposals are made at regional, local and site scales. Traditionally, landscape architects develop planning and design solutions for open space, for new housing or commercial developments, for parks, public areas, and, naturally, for gardens. Other examples are projects aimed at conceptualising the future of large regions, at integrating significant infrastructure projects into existing landscapes, and mitigating environmental impacts as well as making contributions to local and regional plans. Landscape architects also propose strategies for the development of open space systems and (urban and non-urban) nature development. Equally important, landscape architects are involved in preparing plans for the management of historic gardens and cultural landscapes, of recreation areas in the urban fringe, and of national parks and protected landscapes. These and other projects are included, as examples and case studies, in landscape architecture education and research.

In landscape conservation, management, and development, landscape architects must not only integrate specialist knowledge from a wide range of disciplines, but also the interests of the public. Society at large has a great concern for quality of life, safety and functionality of rural and urban areas, and for biological and landscape diversity. Within Europe policies exist as a basis for a common strategy to improve conditions for people and their environment. These policies are implemented by national and regional laws and programmes. The European Landscape Convention (ELC, article 3) aims to promote landscape protection, management and planning, and to organise European co-operation on landscape issues. It is by these activities that landscape architects, in a critical way, take into account the implementation of policies aimed at high quality of life and high environmental quality. Important policies include the European Landscape Convention, and policies referring to cultural heritage, urban and rural development, climate change, biodiversity, soil protection, water management and flood risk prevention, and to all policy regarding sustainable development. This variety of subjects calls for integrated and, at the same time, critical approaches to teaching, learning, and research. Examples of important policies and programmes that have a direct link to territorial development and landscape architecture are included in the box below.

- European Landscape Convention
- Territorial Agenda of the EU
- Climate change: Second European Climate Change Programme (2005-2009)
- Biodiversity (CBD)
- Sustainable Development Strategy 2005
- Flora, Fauna & Habitats Directive, Natura 2000
- Thematic Strategy on the Sustainable Use of Natural Resources
- Thematic Strategy for Soil Protection
- Thematic Strategy on the Urban Environment
- EU Water Framework Directive (WFD)
- Flood Directive
- Rural Development

The European Landscape Convention calls for specialist landscape education. Landscape architecture degrees meet this need in an ideal way.

Importance of diversity in relation to needs of society

The complexity of landscape as the subject area of landscape architecture is reflected by the diversity of approaches that can be found throughout Europe. While there is much to be done to move towards the convergence that is one of the main goals of the Bologna Process, there is also much richness and variety within European landscape architecture education. Such richness should be cherished; it is irreplaceable. This vernacular diversity is rooted in the nature and culture of societies and of landscape itself, and it should not be sacrificed only to achieve conformity for its own sake. In European landscape architecture, diversity is the basis and an important potential for the co-ordinated development of specialisations.

Within landscape architecture educational programmes there is a distinction between 'general academic degrees' and 'professionally orientated degrees'. The former might focus on methods and approaches, including 'landscape studies', to teach planning, design and management. Professional degrees, by contrast, are preparations for entering and practising landscape architecture as a profession.

2. LANDSCAPE ARCHITECTURE CORE COMPETENCES

Core competences⁴ of landscape architecture centre on the process of intervention in landscapes to create new or revitalised places, by means of landscape planning, design and management, as well as by project implementation. Two interdependent core competences of landscape architecture are:

- Knowledge, skills and understanding of planning, design and management, to create new or conserve existing landscape situations, closely integrated with an
- holistic knowledge and understanding of the nature of landscape and the ways in which it is perceived in time and space, and the pressures and driving forces to which landscapes are subjected.

The interdependent nature of these two core competences means that the teaching and learning of both of them should be tightly integrated with one another. It is not to be regarded as sufficient for them to be acquired separately, as might be the case if a student was to study first architecture (providing introductions to parts of the first core competence) and then, separately, geography (providing a grounding in some of the second). The integration of the two core competences takes place in the form of studio teaching. Roughly equal importance should be afforded to each of landscape architecture's core competences over the course of first and second cycle landscape architecture degree programmes, with the result that about half of the time on the curriculum should be devoted to studio and project-based learning, while the remaining 50% will aim to convey the (subject specific) competences necessary for an in-depth understanding of the landscape and the way in which it is perceived by means of other forms of teaching, including lectures, seminars and workshops.

Core competences of landscape architecture, as reflected in the European Landscape Convention, are 'actions' such as landscape management, planning and design. According to the Convention, these 'actions' include

- the identification and assessment of landscapes, and the definition of landscape quality goals;
- the establishing and implementation of landscape policies aimed at landscape protection, management and planning (through the adoption of the specific measures);
- the establishing of procedures for participation by the general public, local and regional authorities and other parties with an interest in the definition and implementation of landscape policies.

⁴The concept of 'core competences' comes from the world of business management. Here it is used to describe the set of unique capabilities which a particular company is able to develop or acquire in order to give it competitive advantage in the market place. In the case of an academic discipline, the term 'core competences' can be used to refer to those distinctive capabilities which give it specific characteristics and thereby distinguish it from other disciplines.

3. GENERIC COMPETENCES IN LANDSCAPE ARCHITECTURE⁵

According to the terminology used in the 'Tuning Project' generic competences refer to knowledge, skills and understanding that students acquire regardless of their particular area of studies. These are often also referred to as transferable or 'soft' skills. Generally speaking, landscape architecture degree programmes are ideally placed to provide students with the opportunity to acquire and practise a wider range of generic competences as a result of the emphasis placed on project work, and it is largely in the context of project and studio teaching that generic competences are learned and practised throughout the degree programme. It is, however, important that course descriptions explicitly specify which these are, and that thought is given to how the acquisition of generic competences can be further improved.

As part of the LE:NOTRE project a survey on generic competences was conducted, and academics, students and professionals were asked to rank a given list of competences in order of their importance for landscape architecture education (see figure 1). In addition they were asked to suggest other generic competences which were not included in the list which had been developed in the context of the Tuning Project.

Questions of the survey on generic competences

- 1. To what extent does the standard list of generic competences compiled for the Tuning Project cover all of the generic competences which are relevant to landscape architecture*
- 2. What additional competences, which are of particular importance for landscape architecture, should be added to this list?*
- 3. How should, in your opinion, the items on the extended list of generic competences be ranked in terms of their importance with regard to the individual working groups?*

Generic competences were divided by the 'Tuning Project' into three categories:

- a. instrumental competences, i.e. capacity for analysis and synthesis;
- b. interpersonal competences, i.e. critical and self critical abilities and teamwork;
- c. systemic competences, i.e. capacity for applying knowledge into practice.

Results of the ranking of generic competences suggested through the Tuning Project are listed in the table below (Fig. 1). From the LE:NOTRE survey a set of additional generic competences was drawn up for landscape architecture. Excerpts are listed in Fig. 2.

⁵Tuning Line 1

Instrumental competences	Interpersonal competences	Systemic competences
1. Capacity of analysis and synthesis 2. Capacity for organisation and planning 3. Basic general knowledge 4. Grounding in basic knowledge of the profession 5. Oral and written communication in own language 6. Knowledge of a second language 7. Elementary computing skills 8. Information management skills 9. Problem solving 10. Decision making	1. Critical and self-critical abilities 2. Teamwork 3. Interpersonal skills 4. Ability to work in an interdisciplinary team 5. Ability to communicate with experts in other fields 6. Appreciation of natural diversity and multiculturalism 7. Ability to work in an international context 8. Ethical commitment	1. Capacity for applying knowledge in practice 2. Research skills 3. Capacity to learn 4. Capacity to adapt in new situation 5. Capacity to generate new ideas 6. Leadership 7. Understanding of cultures and customs of other countries 8. Ability to work autonomously 9. project design and management 10. Initiative and entrepreneurial spirit 11. Concern for quality 12. Will to succeed

Fig. 1: Ranking of importance of generic competences (as listed by LE:NOTRE working groups)

1	1. Statutory legislation, legal system and history of law and capacity to work within the legislative system. Knowledge of national and European law.	Ability in negotiating, moderation and conflict management
2	2. Understanding the cultural environment	Dealing with complexity and ability to think and act in an integrated and holistic way
3	3. Ability to accept criticism and to take it into account	Reflective practice and the ability to learn from failures
4	4. Ability to manage public participation	Capacity of argumentation, abstraction, project management, to set priorities
5	5. Ability to understand complex and dynamic systems	Spatial (3 dimensional) thinking; Ability to take the dimension of time into account

Fig. 2: Additional generic competences (as listed by LE:NOTRE survey)

Integrated teaching and learning of generic competences

In most landscape architecture programmes generic competences are taught and acquired in a contextual way, above all in the context of studio and project work. In most projects, for example, students practise a wide range of instrumental, interpersonal and systematic competences as a matter of course: they work autonomously in teams to apply knowledge in analysing practical situations, solve problems and generate new ideas and communicate these, using organisational and project management skills. This takes place continuously throughout the degree programme.

Making generic competences explicit

The course units in which the most important generic competences are to be acquired and practised should be defined (or rather the generic competences which are taught within each course unit should be identified) and their acquisition specifically assessed. It is advised to point at the most important competences that are practiced and assessed. Where appropriate, students should be offered special coaching on how to acquire important generic competences. Students should be made aware which set of generic competences is part of the learning goals of every course. Guidance on criteria for assessment levels of 1st and 2nd cycle can be found in the Dublin Descriptors (Appendix D). An example of how competences may relate to individual courses is presented below.

Competence (Examples)	Course 1	Course 2	Course 3	Course 4	Course n
Problem solving	P	P & A			
Making oral presentations	P	P	P & A		
Graphic presentation	P		P & A		
Time management				P	P & A
Ability to accept criticism and to take it into account				P & A	
Etc...					
<i>Key to the scheme: P = competence practised, A= Assessment of the competence</i>					

4. SUBJECT SPECIFIC COMPETENCES⁶

Competences specific to landscape architecture are defined according to 12 fields reflecting the key areas of knowledge and expertise of the discipline. These fields are expressed in terms that are specifically landscape architecture related; each of them also include areas of knowledge, skills and understanding which are common to a number of neighbouring disciplines. Such subject matter from neighbouring disciplines may also feature prominently in the curricular of landscape architecture programmes.

In the following sections 4.1 to 4.5 these key areas of knowledge and expertise are grouped according to

- (1) *Theory and Methodology* in Landscape Architecture (section 4.1),
- (2) *Planning, Design and Management* (section 4.2),
 - *Landscape Design, Landscape Planning, and Management*
 - *Urban Open Space Planning* (and Policy)
 - *Interpretation and Conservation/Management of Cultural Landscapes*
 - *Conservation/Management of Parks and Gardens*
 - *Planning/Design for Infrastructure Projects* (and Landscape Impacts)
- (3) *Vegetation and Materials* (section 4.3),
 - *Materials and Construction Techniques*
 - *Vegetation Establishment and Plant Materials*
- (4) *Information Technology* in Landscape Architecture (section 4.4),
- (5) *Professional Practice* of Landscape Architecture (section 4.5).

Each key area includes specific fields and sets of knowledge, skills and competences that students of landscape architecture should acquire during their studies. (This account was developed “bottom up” and may be extended in the future.) Key areas are closely linked. For example, section 4.1 discusses knowledge, competences and skills that relate to the theory of landscape architecture; in developing landscape architecture theory reference is made to the history of landscapes and gardens. (They are the living archives of the field.) Where methods are developed, these also must be tested in practice before they are established as part of accepted theory. Theory building and practice are thus closely related in landscape architecture.

Landscape architecture is concerned with all types of landscape, including those that may be considered outstanding as well as everyday and degraded landscapes (quoting from the European Landscape Convention). Specific areas and fields of landscape architecture may focus on particular landscape types, such as urban landscapes, cultural landscapes, historic gardens and parks, and landscapes touched or produced by Infrastructure Projects.

⁶Tuning Line 2

4. 1. Theory and Methodology in Landscape Architecture

The planning, design and management of landscapes requires an understanding of creating the new. Creating new landscapes always means modifying existing places which may or may not have previously been consciously designed (e.g. 'vernacular' landscapes). Creating new landscapes by planning, design and management (interventions) also implies shaping new mental images of places as much as it involves re-structuring their physical form. Landscape is therefore understood as much in the abstract terms of narratives and symbols as it is through the materiality of geomorphology and vegetation, field patterns, open space structures and gardens. Theory and methodology in landscape architecture must reflect this multi-layered understanding of landscapes.

Landscape, the subject and object of landscape architecture, itself is a complex matter. It demands engagement with academic disciplines bridging the natural and social sciences, the arts and the humanities. Fields from archaeology to ecology and history are finding that the landscape is becoming a common arena for the meeting of an increasing number of disciplines from different academic domains. As a consequence gaining an understanding of the approaches to landscape from a variety of different disciplines is an important part of landscape architecture theory. Each of the many landscape related disciplines can be seen as having its own theoretical basis, which aims to explain and interpret how the particular parts of the material world and our perception of it 'work'. Theory from the natural sciences can help to explain the bio-physical aspects of landscape; social sciences focus on its use, while the humanities focus on, among other things, its historical development and interpretation, as well as its associated cultural meanings and values both to individuals and groups. However, in landscape architecture theory, planning, design and management processes – not the landscape – are the focus of the discourse.

Thus, landscape architecture theory needs to go beyond simply assembling a series of explanations from each of its supporting and neighbouring disciplines of 'how' the landscape works and is perceived, interpreted and understood. Above all it needs to begin to address the question 'why' individuals, groups and societies intervene to modify and create new landscapes in the way in which they do. In doing so the activity of landscape architecture is interpreted and understood in a wider socio-cultural context, rather than just as a way of tackling technological challenges. Landscape architecture theory must also address procedural issues associated with the process of intervention through planning, design and management.

Landscape architecture methodology aims to be able to apply the increasingly broad range of theories from a growing number of disciplines to the challenge of developing planning and design processes. They must aim to take into account multi-layered views of the complexity of the landscape and its associated meanings and values for individuals, groups and society as a whole. There are two main methodological aspects. The first of these aspects concerns the importance of inter-disciplinarity. A theory and methodology of landscape architecture has much in common with other academic fields, such as urban and landscape studies, cultural and natural geography, biology, ecology and forestry. The second aspect concerns the fact that landscape architecture is a field of practice. Therefore, a theory and methodology of landscape architecture should focus on the specific circumstances concerning human environmental action. Here, the theory of landscape architecture coincides with several other fields of study and new epistemological perspectives, such as "practice based" research, "experience-based" or "situated" knowledge,

“action research”, “research-by-design”, “design-led innovation”, or “research in and through the arts”. These are all examples of attempts to articulate and emphasize integrative ways of knowing, strategies for “reflection-in-action”, or means to enable collaboration between broad ranges of stakeholders.

This double emphasis, on interdisciplinarity and on the integration of theory and practice, reflects an ambition to develop new approaches and mindsets, approaches that will prepare the student of landscape architecture for a further research career.

4. 2. Planning, Design and Management ⁷

4. 2. 1. Landscape Design, Strategic Landscape Planning, Landscape Management

This section focuses on the means of landscape intervention: through the planning, design and management of landscapes. Outputs of these activities are, among others, planning documents, consultations, and built projects. These lead to desired ‘outcomes’, such as improved landscape quality and raised landscape awareness. Planning, design and management of landscapes are core competences of landscape architecture; they are processes of intervention. These processes require creativity; creativity to find good solutions for landscape development, and also creativity to manage the processes well (including the involvement of relevant stakeholders). Planning, design and management competences are acquired in studio and project learning.

		Subject Specific Competences (Knowledge, Skills and Understanding necessary for intervening in the landscape)						
		Vegetation and Plant Materials	Urban Open Space	Landscape Design	Landscape Planning	Theory and Methods	Materials & Construction	Etc. etc.
Core Competence[s] (Relate to the process on intervening in the landscape through planning, design and management)	How should the state of the landscape be described?							
	How does the landscape operate?							
	Is the current landscape functioning well?							
	How might the landscape be altered?							
	What predictable differences might the changes cause?							
	Should the landscape be changed?							
	In what ways can the changes be implemented?							

Fig. 3: Core Competences and Subject Specific Competences in Landscape Architecture

⁷ This Tuning document makes a distinction between ‘planning’, ‘design’ and management, partly because of differences of time and scale can be said to exist between planning and design activities in landscape architecture, but also because, in many European languages, these terms can be used interchangeably. This distinction is made to accommodate semantic differences, not to suggest formalizing and even institutionalizing a distinction between ‘planning’, ‘design’ and management in the discipline of landscape architecture.

While (strategic) landscape planning mainly aims at establishing or changing policies, landscape design mainly aims at changing a landscape by physical intervention, e.g. by building a new project. Landscape management may include policy as well as physical changes. Competences and skills needed to perform landscape planning, design and management include abilities to⁸

- (1) describe, analyse and assess an existing landscape,
- (2) define goals for future development, and landscape quality objectives,
- (3) conceive alternative solutions of how a landscape might be altered, and to assess how these alternatives would meet goals and/or quality objectives,
- (4) select one solution of how a landscape should be altered and propose – and detail - this solution for implementation.

Landscape planning, design and management all emphasize aesthetic, environmental and functional aspects of a landscape. In (strategic) **planning**, a specific competence is to conceive proposals for the future (spatial and environmental) development of a landscape; these are presented as strategic and/or programmatic scenarios and alternatives. Landscape architects should be able to select and implement planning proposals by integrating them into relevant policy; these include statutory landscape plans, comprehensive regional and local plans (e.g. land-use plans), sectoral plans, as well as all instruments of environmental assessment. In **design**, a specific competence is to conceive ideas for the future (physical) alteration of a landscape or a landscape element; ideas are presented as concrete alternatives. Landscape architects should be able to select one alternative and to implement a preferred design solution by providing specifications that are the basis for construction (including the management and monitoring of a construction project). Planning and design activities may differ in scale (regional for planning, local and site for design); however, regional landscape design and local open space planning also exist. **Landscape management** takes design and planning beyond the implementation and establishment phases. A specific competence is to make proposals for the long term development of a landscape. Differences exist between management and maintenance; management concerns intentions and strategies (deliberate development), while maintenance has the focus on preserving an existing landscape or landscape element. Landscape management is concerned with directing the dynamics of a landscape, including its vegetation, water, appearance, etc., by actions that involve people and organizations.

⁸ Refer to: Steinitz, C., 1990. A Framework for Theory Applicable to the Education of Landscape Architects (and Other Environmental Design Professionals. *Landscape Journal* (October 1990). This 'Framework' is a widely accepted way of describing the processes of planning, design and management; it is built around seeking answers to the following questions (also see Fig. 3):

1. how should the state of the landscape be described?
2. how does the landscape operate?
3. is the current landscape functioning well?
4. how might the landscape be altered?
5. what predictable difference might the changes cause?
6. should the landscape be changed?
7. in what ways can the changes be implemented?

Landscape management strategies can involve all types of landscape, such as formal gardens and parks, cultural landscapes, and even 'wilderness' landscapes. A specific technical knowledge of how to manage different landscapes, parks, gardens and their vegetation is needed.

To **describe a landscape** data and information must be selected in scales and degree of detail that are appropriate to the task at hand. The information must be sound, accurate and up to date. In order to gather sound landscape information, landscape architects must be able to perform their own landscape inventory and analysis. This might include the examination and assessment of landscape characteristics, ecosystems and of forces that are transforming them. Some landscape information is provided by findings of other disciplines. Landscape architects must be able to understand information provided e.g. by natural, social and cultural sciences and to interpret relevant findings. Specific competences are to be able to discern which environmental, socio-economic and cultural information is relevant for a specific planning, design and management task. Such decisions are based on **landscape quality objectives**; these are developed and refined during the planning process.

In order to make sound **value judgements**, for example during the **assessment** of planning and design alternatives, it is necessary to be able to draw reference to existing legislation and guidelines, and also to technical and other standards that reflect the state of the art and technology in the field. Planning, design and management also have to take into account the regional and local landscape identity that is based on joint values and cultures. Planning, design and management of landscapes must reflect on the principle of subsidiary and democracy. In planning in particular, the degree of detail and scale relates to the needs of national, regional and local standards of formal (comprehensive and sectoral) planning and also to informal ways of planning, including the participation of local and regional interest groups and stakeholders.

With reference to the spatial context, distinctions may be made between (rural) landscape planning, design and management on the one hand, and planning, design and management for (urban) open space on the other hand. Special areas of knowledge and expertise of making proposals for rural landscapes are to understand interactions between environmental factors and land use that is specific to rural landscapes. Landscape architects should be able to contribute to the sustainable management of natural resources, e.g. by consulting in processes of conflict management. In the context of urban landscapes, by contrast, special areas of knowledge and expertise are to be able to produce strategic plans for the establishment and improvement of green infrastructure in cities, towns, and villages. Goals are to contribute to optimise the appearance, use and management of open space.

4. 2. 2. Urban Open Space Planning (and Policy)

'Urban Open Space' is part of the urban landscape. Landscape architecture approaches to the planning, design and management of urban landscapes include streets and squares, parks and gardens spaces, but also all other types of urban open space. As a system, urban open space "flows" between buildings and built structures, ideally connecting the centre and the surroundings of a city by "green infrastructure" (e.g. as radial and axial systems). Systems and elements of the urban landscape are considered part of the

strategic infrastructure of the city as a whole. The open space infrastructure is appreciated as being as important as the transport infrastructure and other city services.

As planners landscape architects are concerned with strategic policy proposals for the establishment and management of open space, and of open space systems, including urban and peri-urban landscapes. Design competences are applied to produce detailed proposals for developing individual urban spaces such as parks or squares. Policy proposals are generally made at the scale of a whole city and at district scales, while design proposals are made at local and site scales.

One important focus of urban open space planning is to provide resources (green infrastructure) for leisure, recreation, and other open space activities. In addition, landscape architects are concerned with a variety of facets of sustainable development that involve urban open space. Examples are water management and flood control, management for adapting to climate change, providing for human health and well-being, urban nature conservation, environmental education, protecting cultural and natural heritage, providing the infrastructure for sustainable transport modes, contributing to energy conservation within the urban system, supporting social cohesion, preserving identity and strengthening image, and many more.

For theory building it is important to study the history, current development, and design, of urban open space planning in an international context. Studies should include both the conceptualisation of ideas and the implementation and long term management of open space in practice (often related to town planning). Open space planners must have the ability to consider the policy context of the development of urban landscapes. This includes implications of international, national and local policies that relate to social, environmental and aesthetic aspects of urban and peri-urban landscapes.

4. 2. 3. Interpretation and Conservation/Management of Cultural Landscapes

By definition, every landscape that is not natural is a cultural landscape. At the same time, a 'Cultural Landscape' is usually thought of as a landscape that has special cultural values. Therefore, in order to define and analyse a Cultural Landscape, it is important to understand how values are attached to landscapes. On the one hand, landscape architects must be able to analyse the history and development of landscapes and, on the other hand, to investigate the cultural meanings they are associated with.

Landscape architecture approaches to the planning, design and management of cultural landscapes include designed landscapes such as parks and gardens, "historic" cultural landscapes (these are landscapes that depend on historic forms of land use), and others. Particular consideration should be given to the cultural meanings, and how landscape identification has changed over time. An important analytical method is Landscape Character Assessment, LCA. As an 'expert' tool LCA is applied to identify landscape character that is the result of natural and cultural landscape processes within a defined geographical area. This approach contrasts with bottom-up approaches that aim to cultivate awareness and appreciation of 'local distinctiveness' and the factors which make local landscapes unique on the part of local people and to celebrate this distinctiveness, e.g. with the help of the Arts (e.g. such as 'Common Ground' in England (www.commonground.org.uk)). Landscape architects must be able to understand cul-

tural landscapes both on maps and in the field and to recognise and interpret the layers of historic traces which they contain. They should also, however, be able to work with local people through forms of public participation in order to help them to identify what is special and typical about their local landscape. Interpretative skills are needed to present and explain the significance of historic layers and special identities to politicians and to interested parties.

As planners landscape architects are concerned with strategic policy proposals for the sustainable use and management of cultural landscapes. Design competences are applied to produce detailed proposals for developing and managing individual landscapes such as historic parks, or landscape elements such as hedgerows or ponds. Policy proposals are generally made at regional and at district scales, while design and management proposals are made at local and site scales. Understanding cultural landscapes provides the basis for considering the suitability of future land uses, for planning new interventions (e.g. infrastructure projects), for creating and managing landscapes for their special significance and identity, and for designing management regimes and measures for landscape conservation. The history of the development of 'vernacular' cultural landscapes provides an important background to consciously design symbolic landscapes that can be properly understood.

One important focus of planning for cultural landscapes is to provide strategies for leisure, recreation, environmental learning, and other activities. In addition, landscape architects are concerned with a variety of facets of sustainable development that involve cultural landscapes. Examples are water and flood risk management, management for adapting to climate change, strategies for nature conservation, protecting cultural and natural heritage, preserving identity and strengthening image, and many more.

For theory building an important focus is to study the history and development of cultural landscapes in a European and international context. Studies of traditions and trends include both the conceptualisation of ideas and the implementation and long term management of cultural landscapes in practice. For the purpose of reference making it is necessary to consider (historic and contemporary) examples of cultural landscapes as well as individual case studies. Landscape architects must have the skill to evaluate existing methods, approaches and examples, to draw conclusions for future action in developing cultural landscapes, and to make proposals for new management concepts. Landscape architects must also have the ability to consider the policy context of the development of cultural landscapes. This includes implications of international, national and local policies that relate to social, environmental and aesthetic aspects of cultural landscapes. The respective international (in particular UNESCO and Council of Europe and European Union), national and local legal frameworks should be understood, as well as their shortcomings when it comes to dealing with issues associated with the conservation and development of the cultural landscape.

4. 2. 4. Conservation/Management of Parks and Gardens

Chronology and characteristics of the development of landscape planning, design and management from classical antiquity to the present are as central to landscape architecture, as are the works, approaches and ideas of their designers. Also of central consideration is the treatment of landscapes, parks

and gardens and of all open spaces within the broader context of the politics, philosophy, art, architecture, urban design and cultural landscape development that shaped them. To develop and preserve this knowledge, and the examples that contain such knowledge, provide important reference for contemporary and future thinking and action.

The eras to be included begin with the origins of garden art (paradise garden, the Arcadian landscape, etc.) and Classical gardens and landscapes (Greece and Rome), consider Medieval, Renaissance and Baroque gardens and landscapes, as well as all phases of the development of the so called 'landscape garden' (Classic, Romantic), leading to more recent and contemporary project types, such municipal public parks (and the Volkspark Movement), Arts and Crafts and Art Nouveau movements, modernist parks and gardens, "Ecological" parks and gardens (Naturgärten), Postmodernism, World fairs, Garden shows, Regional Parks and Theme parks. During all epochs of human history landscapes have evolved, not as products of deliberate design, but as a result of the "action and interaction of nature and culture" (ELC). These "evolved" landscapes cover most of the world's territory; they are "cultural landscapes" (see below) that are as symptomatic of the political, philosophical and technological character of an era as designed landscapes are. Every one of the design eras and landscape epochs are represented, in an almost iconographic way, by certain people who represent ideas, paradigms, methods and technologies (patrons, thinkers, planners, designers, etc.). These people represent milestones of the development of the landscape architecture as a field and also as a profession.

The conservation and restoration of historic landscapes, parks, open spaces and gardens serves to maintain the living archives of landscape architecture philosophy and paradigms. This endeavour is supported by international and national legislation, by international charters, agreements and organisations (e.g. ICOMOS, ELC, etc.). There are close relationship with the history man's role in changing the face of the earth, with the history art and architecture (Social, intellectual and cultural context). Of particular importance in the history of the field is the development of the use of plants, or "plant material" and vegetation. There are relations to the role of (early) plant collectors, with imperialism and industrialism (rapid global distribution of species). Fields requiring special knowledge and expertise are 'landscape history' and 'garden archaeology' (specific methods and techniques).

4. 2. 5. Planning/Design for Infrastructure Projects (and Landscape Impacts)

Landscape architects have a long tradition to contribute to the planning, design and management of landscapes that are part of, or affected by infrastructure projects. These landscapes include large-scale developments in rural areas, large scale industrial projects, large scale agriculture, forestry and land development projects (amelioration, reform), transportation projects (canals, road and rail, ports and airports); water and flood risk management (ground water mining, municipal waste treatment, reservoirs and dams, river regulation and engineering); coastal protection works, large-scale power and energy developments (e.g. power stations, wind farms, power transmitters, etc.); quarrying and mineral extraction projects; landfill and waste disposal site. On the other hand, restoration of derelict land and the rehabilitation of old industrial and other disused areas are also included. An important focus is on integrating large scale engineering projects into an existing landscape; this includes the mitigation of and compensation for environmental impacts (e.g. habitat connectivity for migrating fauna). Measures for mitigation and

compensation of environmental impacts include the establishment of vegetation (e.g. for mitigating visual effects, to encourage wildlife, for erosion control, etc.), the change of land form (e.g. for noise control, visual screening, to provide drainage, etc.), the retention and management of surface water, and others.

As planners landscape architects are concerned with strategic policy proposals for placing and managing landscapes of large infrastructure projects (sustainable development) ⁹. This task relates closely to Strategic Environmental Assessment and to Environmental Impact Assessment (within the context of relevant EU Directives. Design competences are applied to produce (strategic) scenarios at regional scale and, at site scale, detailed proposals for developing “Infrastructure Landscapes”. Policy proposals are generally made at regional scales (e.g. alignment of transportation corridors and habitat networks) and at the same scales that the engineering projects are planned (e.g. impact mitigation plans). Design proposals are made at project scale and at scales for detailing specific sections (e.g. a dam, a road intersection, a bridge, etc.).

By planning and designing infrastructure projects landscape architects must consider natural resources (as specified by European environmental policy and law) and landscape functions, such as food production, leisure and recreation, and other landscape related activities. Other considerations may include nature conservation, environmental education, protecting cultural and natural heritage, preserving regional identity and strengthening landscape character and image, and many more. Analytical methods must be applied that are able to demonstrate the effects infrastructure projects have on natural factors and resources as well as on landscape functions and landscape related activities (Examples: the so called Environmental Risk Assessment tool, visual landscape analysis. Landscape architects must be able to understand potential landscape and environmental affects both from their own the field analysis, and from applying specific data sources (e.g. thematic maps, sectoral consultation). They should also, however, be able to work through forms of public participation in order to identify what interested parties consider special and valuable about their regional and local landscape. Interpretative skills are needed to present and explain the significance of special values and identities to politicians and to other decision makers (for example people in public administration).

For theory building an important focus is to develop approaches for planning, design and management of infrastructure projects in a European and international context. For the purpose of reference making it is advisable to monitor how ‘Infrastructure Landscapes’ develop over long periods of time; this includes regional as well as individual case studies. Landscape architects must have the skill to evaluate existing methods, approaches and examples, to draw conclusions for future action in assessing, planning, designing and managing landscapes of infrastructure projects. Landscape architects must also have the ability to consider the policy context of the development of infrastructure projects. This includes implications of international, national and local policies. The respective international (in particular European Union), national and local legal frameworks should be understood (e.g. standards of environmental assessment, principles and procedures of SEA and EIA, national implementations of the EA Directives, etc.

⁹ see “Guiding Principles for Sustainable Spatial Development of the European Continent” adopted by the European Conference of Ministers responsible for Regional Planning - CEMAT in 2000.

4. 3. Vegetation and Materials

4. 3. 1. Materials and Construction Techniques

The central domain of this area of knowledge, skills and understanding is to prepare and implement technical planning documents that are needed in order to realise designed projects. Its subjects range from the qualities, characteristics and uses of **landscape materials** to their **detailing** and **briefs of specification**. The organisation and management of the landscape construction process are issues, starting with feasibility studies until the final completion of the project. A part of the process is the selection of the use of off-the-shelf products versus the design of custom-designed elements. Relationships between design, construction, use and maintenance are important aspects of this subject area.

The skills have to focus on making technical solutions that take into account the design concept. The implementation is in line with the desired spatial quality. It responds to the expected use and general image of the project. The landscape architect has to make a choice based on sustainability and durability of the materials and constructions. Plan implementation should reflect the level of ambition of the project.

Knowledge is required of innovation of technical solutions and the development of new materials. For some objects and elements special techniques are required: roof gardens, façade planting, indoor planting, golf courses, sporting grounds and degraded landscapes. Professionals have to apply methods and techniques like calculations for runoff water, grading calculation and dynamics (diagrams of forces).

The environmental technical aspects – e.g. acoustic, noise, lighting, microclimate, coastal protection, erosion - are important on the site level, as well as for planning and structuring of spaces. Subject areas to be included into teaching and learning include construction materials, construction techniques, engineering techniques (including bioengineering techniques), standards and briefs for specifications, contracting and monitoring, quality assessment of plan implementation and construction. Special tasks may be roof garden development, greening on facades, indoor landscapes, etc.

4. 3. 2. Vegetation Establishment and Plant Materials

Knowledge about plants, plant material and vegetation is characteristic and in many respects unique for landscape architecture. With its ability for constant modification, the vegetation concept constitutes a manifest component for sustainable planning. Furthermore the full advantage still has to be taken in the use of vegetation for enhancing human health and enjoyment. Areas covered with plants can serve as highly practical means for people to get emotionally and physically involved in their surrounding landscape. The subject area 'Vegetation and Plant Material' in landscape architecture is regarded as the knowledge, skill and competence to use, handle, planning and design with plants. The core of knowledge is consequently to be specified in relation to the three professional landscape activities that are carried out by landscape architects – landscape design, landscape planning, and landscape management.

In **landscape design** the focus has traditionally been on creating pleasant and attractive species combinations; increasingly, an equivalent importance must be attached to the question of how to esta-

blish and how to keep up desired appearances for long-term and sustainable designs. Thus, landscape architecture is aiming to articulate awareness that management and maintenance play a pivotal role in shaping aesthetic qualities with values of feel, look, usefulness and biodiversity. Due to the flux inherent in landscape design that is essentially composed of living material, a dynamic spatiality is unique to landscape architecture. In order to make the most of this apparent spatial dimension of plants, the interrelationships between plants and their living and nonliving environment require attention. The skill of a designer, who uses natural features and processes of vegetation to visually organize means for understanding, will also include the skill to conceptualize ecological information.

Crucial for the development of an aesthetic pleasing and ecologically diverse vegetation is **landscape management**. Landscape architecture counts on management as a creative process, where numerous planning and design considerations are involved (see above). In order to change the attitude from the immediate effect of ready-made plantings towards more dynamic systems, the planning and design process must also include some essential steps of mutability, from the establishment phase to phases representing various time-scales and grades of maturity.

Ecological knowledge should be used as a guiding principle for **planning** and management. It is important to link biological-technical knowledge about plants and other material, through relevant vegetation types not only into planting design, but also considering the aspect of how to integrate design with management and planning. With a change of urban (styles) and a flexible attitude towards the spreading of the urban-rural fringe, the time has come to re-evaluate our modes of planning. With radical changes of the society, and facing the effects of the climate change, landscape architects need to learn to understand which characteristics will be preferred for future landscapes, parks and urban open space. Already at the planning stage the structure and quality of green areas must be considered, especially if the use of vegetation will be regarded as a key issue in both cities and rural context. Bringing such a profound landscape perspective into planning would open for a landscape urbanism, where the land forms, with its existing and planned vegetation, can form the leading principle for future expansion and development.

4. 4. Information Technology in Landscape Architecture

Information technology (IT) has a number of different roles in landscape architecture research and practice. It has been integrated into tasks such as text editing, calculation, drafting, production of working plans and presentations. However, as both software and digital communication continue to develop, it becomes more evident that IT cannot be understood as a host of tools from which one simply picks the right one to solve a certain problem. More importantly, IT has to be regarded as a technology that changes the way we understand and interact with the world. For example, the fourth dimension that is of particular importance in landscape architecture is now visualised in high resolution images and animated video sequences. At the same time, people in general have become accustomed to walk or even fly through animated landscapes (e.g. computer games), and customers have begun to expect that the use of plants and materials is presented to them in photo-realistic images.

The main areas for subject specific competences for IT in landscape architecture are:

- Understanding of the possibilities of IT in landscape architecture. Knowledge of types of IT-tools and when to make use of these.
- Data capturing and management – understanding and defining which data are essential for a landscape planning project. Defining landscape elements, factors and categories and its relations. Normalising these in a systematic way. Remote sensing, GPS, scanning and digitizing information.
- Data modelling of landscape elements and processes.
- Basic skills in the use of GIS for analytical purposes and of CAD for presentation, visualisation, calculation. Using spatial databases for analysis of landscapes.
- Use of IT in landscape design. Theory of terrain modelling. Defining spatial relationships, distances. Inserting the factor time in the models. Making use of movement for understanding the environment.
- Use of IT in presentation and communication. Theory and techniques for communication and presentation. Selection of the right kind of presentation. Use of light and material in computer modelling. Presentation of maps with adjusted level of detailing.
- Use of IT in landscape management. Combining calculation and planning modules with spatial databases.
- Use of IT in construction. CAD-software for detailing and technical drawings and budgeting. Preparation of tender documents.

4. 5. Professional Practice of Landscape Architecture

Landscape architecture practice is concerned with ways how the characteristics of (the various layers of the) landscape must be integrated to create functional, environmentally acceptable and meaningful proposals and projects. Within an academic context is not feasible to acquire all competences for professional practice. However, students should have at least a basic understanding of the competences of professional practice. Part of the competences may be mastered and assessed in the context of internships, for example at a landscape architecture or governmental office, or at an NGO. Others can be acquired during a traineeship before or after graduation. Competences relevant to professional practice include project management, contracting procedures and management (e.g. specifications, tendering, commissioning, cost control, etc.), site and project monitoring, office organisation and management, and many others.

5. LANDSCAPE ARCHITECTURE EDUCATION AND DEGREES

5.1. Introduction to educational cycles

The Bologna Agreement defines 3 educational cycles¹⁰

- 1st cycle programmes - minimum of 180 credits (ECTS¹¹)
- 2nd cycle programmes – for example 120 credits (ECTS), 60 credit master following a 240 credit Bachelor, or other models¹²
- 3rd cycle programmes, leading to a PhD, or Doctorate Degree

Completing a workload of 300 credits (ECTS), graduates may be eligible to apply for entry to the profession, after having undertaken a pre-requisite period of supervised professional practice. Alternatively they may choose to apply for entry to a 3rd cycle programme..

The required 300 credits may be earned either in

- consecutive 1st and 2nd cycle programmes; or
- integrated programmes where 1st and 2nd cycles are combined; or
- conversion master programmes together with a 1st cycle degree in a related field (additional requirements; see below).

Current first cycle Landscape Architecture programs in Europe range from 3 to 5 years and second cycle programs range from 1 to 4 years. In the Bologna agreement, there is a minimum for the first cycle of 180 ECTS and a minimum for the second cycle of 60 ECTS. Some schools feel that there is a need to have a comprehensive course that leads up to a master degree with a minimum length of 5 years. In some countries there are 4 years required within the context of formerly first cycle courses (like some of the *Fachhochschule* in Germany); these lead to a level which might be higher than a 3 year first cycle level.

To acquire all competences needed to be a landscape architect a minimum of 300 ECTS of education in landscape architecture is mentioned. A master degree in landscape architecture (MA in landscape architecture, MSc Landscape Architecture, MLA) is thought to be the entrance level for professional recognition as a landscape architect in Europe. According to the developments in different countries the length of the courses could be temporarily shorter. First cycle programs should be at least 180 ECTS to acquire the basic competences (defined by knowledge, skills and attitude) for landscape architecture. The second (masters) cycle should be at least 120 ECTS. Part of the competences may be acquired by doing a traineeship or year-out at a landscape office.

¹⁰ Compatible with levels 5-8 of the European Qualifications Framework For Lifelong Learning, EQF.

¹¹ European Credit Transfer System, ECTS. The 'credits' are expressions of student's time investment, also called "work load". Credits are given for every course completed by a student. Credits are like a currency that is recognised by all members of the system, and, on this basis, all schools are expected to facilitate student transfers between schools and also between programmes and cycles.

¹² Internationally different types of 2nd cycle programmes exist; e.g. in North America, first and second professional degrees are offered, or non-professional masters in landscape architecture (which might be considered a basis for PhD programmes).

5. 2. First cycle programmes

There are over one hundred European institutes of higher education offering an even larger number of undergraduate and graduate programmes in landscape architecture. While the content of these educational programmes is similar, particularly at the undergraduate level, there exists a variety of different pedagogic philosophies and didactic cultures. These differences are part of the European heritage that should be treasured and appreciated. Based on an inventory of existing programmes, and of resources allocated to them (source: LE:NOTRE website), it was found that undergraduate programmes have much in common. Most of them put the emphasis on:

- Activities of conceptual work; mainly planning, design, and management of open space and landscape;
- Basic knowledge; particularly on theory pertaining to landscape and landscape transformation (including social sciences), on methodology and methods related to design and planning, on ecology (mainly rooted in natural sciences), on culture and cultural history (including art history), and on technology (relating to engineering and material sciences).

For a 1st cycle programme in landscape architecture it is important that a substantial part of the time (a student's work load, measured in ECTS; see below) is dedicated to education and training in studios. Studios provide a learning environment in which students work as individuals and in teams; it is here where they begin to form spatially explicit solutions to complex landscape problems under the guidance of their teachers. During, and in addition to, the studio a combination of teaching and learning modes are used: lectures, seminars, field work, excursions and presentations with feed back on proposals. Often the studios engage in real world projects with stakeholders. The studio is an integral framework during which teachers guide students in a methodical way through the process of discovery, analysis, and development of concepts, proposals and critical discussion. The proposals consist of ideas, drawings, maps, three-dimensional models and the development of landscapes in time.

In the course of the programme studios comprise several different aspects, including landscape assessment and analysis, landscape construction and planting design and, for a smaller part, maintenance. Since the field of landscape architecture covers a wide range of types of plans and projects, a specialisation is eventually called for. However it is important that students master all core competences with reference to landscape planning, landscape design or landscape management, and that every undergraduate programme include studio projects for all three of them. During the first two years of undergraduate programmes most courses will be obligatory. In the 3rd year students may opt for courses that emphasise either landscape planning, landscape design or landscape management.¹³

During the 1st cycle it is mandatory that students master design, sketching and computer skills from the very beginning in order to be able to apply these in the studios, and in practice. The same counts for basics in ecology, and in the humanities and in social sciences. The actual projects offered by teachers

¹³ In some countries governments have established standards for first and second cycle programmes. Such national standards may or may not agree with recommendations made in this Tuning document. Where disagreements exist, these should be included in discussion on the future of landscape architecture in Europe.

should be new ones every year; they should be related to current issues of professional practice and needs of society. For deepening their understanding in a specific area of knowledge, students will submit a final project or report on a topic that is defined in consultation with teachers.

The overview and analysis of European 1st cycle landscape architecture programs lead to the following structural recommendations:

1. Acquiring conceptual proficiency, i.e. spatial design, planning and management skills, is the most important objective of landscape architecture education. A substantial part (e.g. 40- 60%) of the overall work load should be allocated to these activities, the optimal mode of learning and teaching being studio work.
2. Landscape architecture education is interdisciplinary by virtue of the nature of the field. Depending on the philosophy of the school (university) and the emphasis of the programme, landscape architecture education may be most closely integrated with architecture, town planning, etc. In order to acquire basic information, specialized areas of knowledge would need to be included, such as a number of different sciences related to landscape and nature, to society and policy making, to arts and history, to technologies and materials, etc. According to the idea of interdisciplinarity, courses should be designed as integrated with landscape architecture education, preferably being tailored to it.

5.3. Entry criteria to 2nd cycle programmes and transfer from 1st to 2nd cycle

Schools define entry requirements for their programmes. Before embarking on the implementation of the Bologna agreement many landscape architecture schools and departments offered one **integrated programme** that included what is now considered 1st and 2nd cycles. In some universities such integrated programmes continue exist, while other schools undertook major restructuring and developed **two consecutive cycles**. In the following a framework of reference is given for admitting students to:

- integrated programmes;
- 2nd cycle of consecutive programmes.

Students may be admitted to integrated or to 2nd cycle landscape architecture programmes (a) after successfully completing the 1st cycle and (b) by fulfilling a defined set of **admission criteria** (grades, transfer credits, etc.). Suitable “intake moments” have to be defined for admitting undergraduate students to integrated programmes. Graduates of 1st cycle programmes from neighbouring disciplines may enter consecutive and integrated landscape architecture programmes (a) after having been evaluated against a set of **performance criteria** (measured e.g. by possessing specific competences), (b) successfully completing defined conversion courses / modules (e.g. in areas they do not pass during evaluation)¹⁴, and (c) by fulfilling a defined set of admission criteria (grades, transfer credits, etc.).

¹⁴ It is possible that applicants also gain competences through self-study or working in practice.

Entering integrated programmes

Some schools continue to offer four year 1st cycle programmes and also (integrated master) programmes that include the 1st cycle. Both approaches are acceptable within the Bologna agreement. Provisions must be made for graduates of other 1st cycle programmes to enter integrated programmes and continue studying for a master degree. Therefore, integrated programmes (300 ECTS, about 5 years) should define an adequate intake moment (e.g. the beginning of the 4th year) and the criteria for graduates of 1st cycle programmes to make successful applications. These criteria should be defined as admission and performance criteria that all students would have to meet, including the ones who already are part of the integrated programme when they reach the defined “intake moment”). Schools or departments define the additional workload and the content of courses that applicants might have to take, to make up for deficits in areas where they do not meet described requirements. Differentiation should be made for graduates of full landscape architecture programmes, graduates of related design and planning programmes (e.g. architecture, planning) and graduates of related disciplines (e.g. geography, ecology). A set of conversion courses may range from 30 to 60 ECTS.

Admission of applicants who graduated from 1st cycle landscape architecture programmes

A common practice is that each school defines specific admission and performance criteria. For applicants who graduated from any 1st cycle landscape architecture programme admission may be granted unconditionally, on the basis of complete transcripts and diploma papers. Some schools may ask for additional proof of previous performances, as defined by grades or specific achievements (for example: portfolio of recent work); a demonstration of proficiency in a specific language may also be important. Other schools may enter applicants into a competition or selection process before admitting them to their 2nd cycle programme.

It is important for schools and programme managers to make the admission and performance criteria transparent and public, for example by entering them into the LE:NOTRE website database. All potential applicants would find the information they are looking for and students may compare their potential options for 2nd cycle studies after having completed their 1st cycle studies.

Admission of applicants who graduate from 1st cycle programmes in related subjects

Students, who graduate from 1st cycle programmes in fields such as architecture, urban planning, ecology, forestry, environmental science, geography, and others, may have a background that enables them to take up studies that lead to a master in landscape architecture. In most cases, such applicants might perform well in one of landscape architecture's two core competences, while lacking knowledge and understanding in the other. If such 1st cycle graduates apply to be accepted to 2nd cycle landscape architecture programmes they first need to take part in a conversion programme. Conversion may be achieved by successfully completing a specifically defined set of courses, or by entering a so called ‘conversion

master' (see below). To define a specific set of conversion courses, applicants should first be evaluated against a set of performance criteria. They should then only need to take courses in areas they do not pass. It should be possible they could gain competency through self-study or having worked in practice. In both cases, applicants should pass an admission test. It is advisable that applicants be given the opportunity for consultation and that experienced staff members be available for this purpose. Ideally, these staff members are in contact with schools and departments where applicants have previously graduated from.

5.4. Second cycle programmes

Schools offer a wide range of 2nd cycle programmes. This diversity is important to reflect Europe's rich cultural heritage, but also the broad scope of the discipline itself. While a 1st cycle program should cover the core competences in the field of landscape architecture, a 2nd cycle programme may be more specialised regarding competences, but also thematically, and regionally. It may also put the focus on developing research skills and/or usually issues relating to professional practice. Students are also beginning to gain the autonomy to develop new approaches enabling them to make contributions to professional knowledge and practice, some at the forefront of advancement in the field.

By stating where, in the curriculum, a school places an emphasis, and which competences will mainly be developed, schools can define their particular educational and research profile. Thematically, programmes may, for example, specialise in landscape planning, landscape design, and landscape management, or put the focus on particular aspects. In the structure of each 2nd cycle programme there should be room for acquiring basic research and/or advanced professional competences. Therefore about 30 ECTS should be allocated to producing the thesis leading to acquiring the 2nd cycle degree.

5.5. Conversion Masters

A Conversion Master' programme is a specific type of degree aimed at providing graduates from 1st cycle programmes in neighbouring disciplines the opportunity to gain a professional qualification in landscape architecture. Coming from a neighbouring discipline – such as architecture, urban and regional planning, geography or biology – applicants to a Conversion Master programme will have already acquired a range of competences that are relevant for landscape architecture. While each of these will have their own specific contribution to make to the landscape planning, design and management, these competences alone cannot compensate for the three years of studies in a 1st year landscape architecture programme.

A Conversion Master programme is thus different from consecutive a 2nd cycle landscape architecture programme that is designed for graduates who have earned a first landscape architecture degree. Important differences are:

- The entrance requirements – Special entrance and performance requirements may be defined. Applicants should be evaluated against a set of performance criteria and, depending on local traditions, might have to pass an admission test. It may be required that applicants have achieved above average

or specific grades during their 1st cycle studies. Only graduates from specific neighbouring disciplines may be admitted to conversion masters programmes.

- The length of the programme – In order to gain those competences that students obtain during a 1st cycle landscape architecture programme, a conversion master programme will have a work load that is greater than that of a 2nd cycle landscape architecture programme of 120 ECTS (see below). It may have 180 ECTS units, as in the case in a typical North American '1st Professional Degree', or it may last for two full calendar years (150 – 180 ECTS), as it customary in the UK.
- The nature of the programme – a 2nd cycle landscape architecture programme might aim to provide a range of options for specialisation; students should not only continue to develop their knowledge and understanding of the subject gained during previous studies, but also to focus on a field of special interest and expertise. A 'conversion master', on the other hand, will itself have to provide much of the basic competences that students were unable to obtain during their previous education.
- The opportunity to work with and learn from colleagues with different but complementary backgrounds. Working alongside and in cooperation with a 'team' of graduates from a range of relevant disciplines include opportunities for students to learn from each other. Programme participants will be able to profit from a wide fund of knowledge and also exposed to a range of different approaches that are to be found within a student body of a conversion master programme.
- Entering a conversion master programme is particularly challenging. Students of neighbouring fields who are motivated to undertake the transfer to landscape architecture are often mature students, and will be highly motivated and ready to make rapid progress from the start. These students will be interested to test generic and specific competences they have acquired during studies for their previous undergraduate degree.

5. 6. Part time degree programs

Within the context of life long learning opportunities are made available for people to improve on existing qualifications while continuing their professional and private life. This can be achieved by, among other options, offering part time degree programmes or part time studying in a regular programme. Within Europe there are only few part time programmes in the field of landscape architecture. Some schools are currently preparing part time programmes. To offer part time programmes in efficient ways schools may use existing courses. Full time and part time students would take part in combined activities like lectures, seminars and presentations.

The learning outcomes of part time programmes should be equal to full time programmes. Participating students may want to combine their studies with working in practice, thereby achieving a higher level of competences. In addition, part time programmes are useful for 'Lifelong Learning', for example in the context of continuing professional development (life long learning is, of course, also possible by enrolling in full time programmes).

5.7. Third cycle programmes

There are several European landscape architecture schools with PhD/doctoral level studies or with plans to introduce them. Such programmes are essential for the academic and professional development of the discipline: it is here where future teachers learn how to teach, where researchers learn how to do research, and where the highest level of leadership and professional development may be acquired.

The core component of doctoral studies in general is identified, by the European Ministers Responsible for Higher Education, as the advancement of knowledge through original research (Bergen Communiqué of 2005)¹⁵. The so called 'Dublin Descriptors' describe students' competences and quality assurance of doctoral programs¹⁶. As fundamental prerequisite, PhD students should be able to (a) position their specific research subjects, within the landscape architecture research agenda, within the broader academic context, and within the context of society (e.g. related to European policies and strategy plans); and (b), evaluate the relevance and usefulness of different research methodologies and approaches specific to landscape architecture as a discipline. With reference to Core Competences (see above) three main areas of development are identified:

1. Planning and design research; aiming to improve landscape architecture theory and methods (e.g. planning and design processes), drawing conclusions from doing case studies, from analysing projects, landscapes plans, etc.
2. Research by planning and design: the analysis of complex spatial strategies by producing and evaluating scenarios, making and evaluating new typologies that are based on new needs (of the public), finding solutions for a social or spatial problem by making and evaluating several proposals, scenarios, etc.
3. Research for planning and design – research in social sciences, ecology, or other disciplines, in order to apply them to landscape planning and design, e.g. landscape classification, surveying the needs of the public, perception of landscape values, etc.
4. Integration of the above mentioned approaches.

A special separate Tuning Report for 3rd cycle has been prepared. Through its LE:NOTRE project ECLAS has organised workshops for 3rd cycle students to facilitate international collaboration. Within workshops presentation on research methods were given and 3rd cycle students discussed methods and contents of their work. It was suggested to

- develop structural networks for collaboration between schools and continue to organise academic meetings for PhD students
- enhance exchanges in teaching and research methods for the field of landscape architecture;

¹⁵ Communiqué of the Conference of European Ministers Responsible for Higher Education, Bergen May 2005; http://www.bologna-bergen2005.no/Docs/00-Main_doc/050520_Bergen_Communique.pdf

¹⁶ Doctoral level qualifications would need to be aligned with the EHEA (European Higher Education Area) overarching framework for qualifications and the European Qualification Framework (EQF), using the outcomes-based approach. European doctoral degrees would have to be made comparable in terms of competences. At the same time the diversity of educational cultures of European universities and academic fields are considered important.

- develop trans-border collaboration for capacity building and for teaching 3rd cycle teaching and research methods;
- develop a common agenda on a European level for landscape architecture research.

5.8. Titles of degrees

Where possible, the title of the degree should refer to the discipline of landscape architecture; at the same time it should reflect the purpose and emphasis of the programme. Titles for 1st cycle degrees may read: Bachelor in Landscape Architecture (BLA), BA in Landscape Architecture or BSc in Landscape Architecture¹⁷. Titles for 2nd cycle degrees may read Master in Landscape Architecture (MLA), MA in Landscape Architecture, and MSc in Landscape Architecture. It is important that the titles of landscape architecture degrees are comparable with titles earned in related disciplines such as architecture and urban and spatial planning.

In some countries the schools can define titles of their degrees, but in many cases the titles of the degrees are defined by national law or regulation. In these cases schools and national associations may advise on the titles of the degrees. Titles should be general and not be very specific; e.g. a Bachelor in Landscape Architecture would be preferable to, say, “Bachelor in site planning”.

¹⁷ Titles that had been established before the Bologna Process may continue to exist in some countries. Examples are the “Diplom-Ingenieur (“Dipl.-Ing.”) in Landscape Architecture (Germany), and the “Engineer Landscape Architect” (Poland).

6. LEARNING, TEACHING AND ASSESSMENT¹⁸

6.1. Learning and teaching modes

Studio learning is at the centre of landscape architecture education: it is here where students work on planning and design proposals for landscape inventions. Students work either individually or in small groups¹⁹. Supervision and guidance includes frequent consultations and presentations. Around the studio a set of other teaching modes may be arranged to support specific learning processes. These consist of lectures, seminars, and excursions.

Because landscape architecture students should develop a varied set of references for their design work and have a good experience of existing urban and rural landscapes excursions (field trips) are an important part of LA programmes. The excursions can be either prepared by teachers or by students. Performing preparatory seminars and writing summary reports enforces the learning effect. Trips and excursions, both to reference projects and to the site or planning area, are also needed to enable students to experience their project landscape and to personally collect data and information. Landscape architects must be able to perform their own landscape analysis and, ideally, this analysis is based on immediate exposure to the landscape.

Lectures and seminars contribute additional information to the studio. These are important for instruction on the use and selection of methods; included are theories and case studies that are relevant to the studio work. If they are designed to provide interaction between teachers and students seminars help students to deepen their understanding of theories and to reflect on the content of case studies. For preparing and writing a paper, or a thesis, teaching assumes the form of a tutorial. This mode of teaching and learning is mostly done on a one to one basis.

To acquire practical skills, i.e. working with specific software or maintenance techniques, different forms of **practical work** are included into programmes, or modules, courses, etc. Practical exercise(s) are undertaken by students, either individually or in groups, with direct supervision by a teacher or instructor. For the practical work a pre-defined task of the use of specific techniques should be provided. For best learning effect, practical training may also be linked to studio projects. For example, sketching may be trained during landscape analysis, certain software applications may be trained in connection with designing scenarios and planning alternatives.

To acquire professional competences **internships** should be included into LA programmes. These consist of an extended period of supervised residency on the part of the student in a design or planning office or in a nursery or contracting firm to gain practical work experience. Experience gained during periods of practical training outside of the university should be reflected upon, for example by writing a scientific term paper, or by keeping and discussing a diary, or by preparing a thematic report.

¹⁸Tuning Line 4

¹⁹ For efficient learning, groups should not exceed sizes of about 20 participants, during first and second year studio, particularly if team work is required. Later, studio groups should be smaller. Universities are advised to provide for sufficient staff-student ratio.

6. 2. Assessment strategy for landscape architecture education

Programme assessment is both formative and summative, and takes place in a variety of formats, including examinations (written essays, oral examination) and peer assessment. Student progress is also monitored on the basis of continuous assessment. While the form of assessment varies from one programme component to another, it is linked to clearly defined goals and anticipated learning outcomes. The assessments based on the project simulations involve also input and feedback from the professional practice, representatives of interest groups or commissioners. Not only are these particularly valuable, they are also fully compatible with the assurance of academic standards.

The assessment strategy of landscape architecture programmes should be based on the following basic principles and guidelines:

- Each element of programme assessment is predicated on 'fitness for purpose'. Assessment supports the teaching aims and objectives of the various components of the programme, such that each learning objective and specified outcome is matched with an appropriate means of assessment, whether for knowledge, understanding or skill.
- Substantive knowledge and understanding is assessed through essays and oral examination;
- Design projects are assessed on the basis of the project plans, project documents, multimedia presentations, oral presentations, students logbooks and oral examination;
- Management and communication skills are assessed through peer assessment and during the working-while-learning period.

The assessment methods ensure that lecturers can monitor the progress of individual student at each stage of the programme. Assessments inform each student of his or her individual level of attainment against the learning objectives set for each component of the study programme:

- After the conclusion of a design project, the commissioner and advisor from the professional practice or governmental organisation give the students feedback on their result and performance, setting it against a professional benchmark;
- Per class, lecturers discuss the results of essays;
- Students' performance and progress as landscape architects is discussed, both individually and within the project groups.

The criteria whereby each individual assessment is to be judged are clear to assessors and students alike. These criteria are appropriate to the learning outcomes to be assessed and to the range of attainments expected for the level of work. Where outside professional assessors are involved (for example, with regard to project simulations and presentations of the results of the design projects), the assessment procedures are discussed thoroughly with these assessors, to ensure that they fulfil the programme criteria and satisfy general academic standards.

The assessment methods and criteria enable each student to fully recognise the levels of knowledge and skills they must attain in order to meet the requirements of the programme. The description of each course unit should contain the assessment forms (including the assessment criteria and their relative weight).

7. QUALITY ASSURANCE FOR LANDSCAPE ARCHITECTURE PROGRAMMES ²⁰

In 2005 the European Association for Quality Assurance in Higher Education has presented a report with guidelines for quality assurance²¹. With this document guidance is suggested that might help facilitate the accreditation and evaluation of programmes specific to landscape architecture. General aspects and procedures of accreditation are not included (these are country specific). The recommendations included in the table below focus on aspects and criteria that are specific for the discipline of landscape architecture. They are developed in more detail in other parts of this document.

For university and department administrators it is important to note that, unlike in the case of most degree programmes in purely academic disciplines, academic accreditation alone is not sufficient for landscape architecture (such is also the case in other professionally orientated fields of study). Academics need to work closely with representatives of the profession to validate the contents of degree programmes (see Appendix F).

²⁰ Tuning Line 5; also refer to Appendix E

²¹ Standards and Guidelines for Quality Assurance in the European Higher Education Area. European Association for Quality Assurance in Higher Education, 2005, Helsinki

Quality aspects	Specific criteria for quality assurance
Degree programme <i>Aims, objectives, final qualifications, content, domain specific, level of the degree and competences of the degree programme</i>	1. Aims, objectives and course content of the degree programme are consistent with the ECLAS guidance specified in this document. 2. The degree programme is recognised by the European Foundation for Landscape Architecture (EFLA) based on the documents for recognition (www.efla.org). 3. Aims, objectives and content are validated by the National Association for Landscape Architecture of the country where the programme is located. 4. The level of the degree is explained by the Dublin Descriptors in general (see Appendix D): 1st cycle graduates can apply current knowledge and skills of landscape architecture that are defined by the core competences and the subject specific competences, 2nd cycle graduates can innovate and develop methods and apply them in complex situations. 5. The content of the degree program relates to the core competences of landscape architecture and the subject specific competences defined in this document. 6. The learning outcomes of the courses relate to the final learning outcomes and the core competences for landscape architecture.
Staff <i>Qualification and experience</i> <i>Quantity in relation to teaching mode</i>	7. Teaching is largely provided by staff that relates the course programme to the professional practice of landscape architecture or research in landscape architecture and has professional or research experience in the discipline of landscape architecture. 8. The number of staff trained as landscape architects is adequate for teaching design studios (size of studio groups suggested in this document).
<i>Interface between teaching and research</i> <i>Relation with other disciplines</i> <i>Current research and professional practice</i>	9. Students acquire knowledge on the interface between teaching and academic research. Within the programme a combination of project work and theory is offered. The programme follows the development in the relevant academic disciplines, which is demonstrated by the incorporation of current academic theories in the field of landscape architecture. 10. Students are studying up-to-date publications and the projects of the design studios relate clearly to the current professional practice and the needs of society. 11. Students adopt recently developed techniques, skills and methods. 12. Course materials are developed in interaction with professional practice and there is an exchange between research and teaching. 13. Students acquire knowledge by studying professional and scientific literature in the field of landscape architecture 14. The programme has clear links with current developments in the professional field and research on landscape architecture e.g. by adopting real-life projects and research themes
<i>Core competences for landscape architecture</i> <i>Didactic concept</i>	15. At least half of the programme consists of design studios or project work in the field of landscape architecture. 16. The programme consists of course units in which students acquire all core competences for landscape architecture. Depending on the profile of the degree programme (professional orientation or research oriented) students acquire professional and/or research skills. 17. The didactic concept supports the development of competences in landscape design, planning and management, and the integration of knowledge of other disciplines within project work. 18. The teaching modes address the core competences of landscape architecture. Design studios and project work are integrated with field trips, reference studies, seminars, workshops and presentations.

Quality aspects	Specific criteria for quality assurance
<i>Assessment and examinations</i>	19. The assessment of (parts of) the programme take places in an integral way. The core competences of landscape architecture are assessed by a combination of the final result (plan, design, and written report), the applied methods and process, presentation and discussion. The assessment should reflect the way landscape architects work in their professional context. 20. Professional landscape architects and academics of other institutes take part in juries or assessment committees especially for final projects and theses.
<i>Materials and facilities</i> Accommodation Computer facilities Botanical garden Library	21. Design studios and project work require large rooms in which students can work on their projects, exchange ideas, present work. Each course should at least have one large studio with studio computer facilities near by (in accordance with the state of the art of ICT). 22. Landscape architecture students need to be able to work with computer programmes for graphic presentation, CAD Drawing, 3D modelling and GIS. Each course should at least have one computer laboratory in which instructions for working with current computer programmes can be given and skills can be practiced. The amount of computer facilities depends on the possibility for student to work with their own computers, the availability of software licenses for students, the teaching mode and whether the course is full time or part time. 23. In order to study plants and plant material students should have access to a botanical garden in which the species and cultivars that are generally applied in landscape projects can be studied. Essential for studying the plants are name plates or a map with the location of the different species. If a botanical garden is not present, the school may adopt a nearby park or green area. 24. It is advised to allocate some space for research on development of plantation and examples of planting schemes. 25. Students should have access to a library and the internet in order to carry out research and study theory. 26. Materials for modelling should be available and students should be stimulated to experiment with modelling techniques in order to explore spatial designs. If some of the materials and facilities mentioned above are missing, it should be explained in what way the school provides for the lack of facilities by other means.
Internal quality assurance <i>Periodic review and measures to effect improvement</i>	27. Representatives of the professional field in which graduates are employed (landscape architecture offices, landscape architects working for local and regional authorities and organizations, staff of research institutes) are involved in the periodic review of the degree program. They reflect on final (professional) qualifications, core competences of the degree program, general content of the program and the quality of the theses and final projects. 28. They comment on the effects of measures to improve the quality of the program.

Fig. 4: Guidelines for accreditation and validation of landscape architecture programmes

APPENDICES

Appendix A: Glossary Tuning for Landscape Architecture

Term	Explanation
ACCREDITATION	Accreditation is a certification of the academic quality of an institution of higher learning. Some countries have independent/private organizations that oversee the educational accreditation process, while other countries accredit through a government agency. Some countries require accreditation and others consider it voluntary. The accreditation process results in formal recognition of a degree programme or institute of higher education by a (non) governmental organisation with formal consequences like the right to deliver a degree, funding by the government of the programme or the institute or certain rights of its graduates.
ASSESSMENT	The total range of written, oral and practical tests, as well as projects and portfolios, used to decide on the student's progress in the COURSE UNIT OR MODULE. These measures may be mainly used by the students to assess their own progress (formative assessment) or by the University to judge whether the course unit or module has been completed satisfactorily against the LEARNING OUTCOMES of the unit or module (summative assessment)
ASSESSMENT CRITERIA	Descriptions of what the learner is expected to do, in order to demonstrate that a LEARNING OUTCOME has been achieved.
CLASS	The group of students in the same year of a given PROGRAMME OF STUDY.
COMPETENCES	In the Tuning Project competences represent a dynamic combination of attributes - with respect to knowledge and its application, to attitudes and responsibilities - that describe the LEARNING OUTCOMES of an educational programme, or how learners are able to perform at the end of an educational process. In particular, the Project focuses on subject-area related competences (specific to a field of study) and generic competences (common to any degree course). The European Qualifications Framework describes competence in terms of responsibility and autonomy. It refers to the proven ability to use knowledge, skills and personal, social and/ or methodological abilities, in work or study situations and in professional and personal development.
COMPREHENSIVE EXAM	ASSESSMENT of the overall LEARNING OUTCOMES achieved over the past/previous years.
CONTACT HOUR	period of 45-60 minutes teaching contact/cooperation between a staff member and a student or group of students.
CONTINUOUS ASSESSMENT	Tests taken within the normal teaching period as part of an annual or the final ASSESSMENT.
CONVERGENCE	Voluntary adoption of suitable policies for the achievement of a common goal. Convergence in the architecture of national educational systems is pursued in the Bologna process.
COURSE UNIT or MODULE	A self-contained, formally structured learning experience with a coherent and explicit set of LEARNING OUTCOMES and ASSESSMENT CRITERIA.
COURSEWORK	Taught COURSE UNITS , TUTORIALS etc., which are a preparation for further independent work.
CREDIT	The 'currency' used to measure student WORKLOAD in terms of the NOTIONAL LEARNING TIME required to achieve specified LEARNING OUTCOMES.

Term	Explanation
CREDIT ACCUMULATION	In a credit accumulation system LEARNING OUTCOMES totalling a specified number of CREDITS must be achieved in order to successfully complete a semester, academic year or a full PROGRAMME OF STUDY, according to the requirements of the programme. Credits are awarded and accumulated if the achievement of the required learning outcomes is proved by ASSESSMENT.
CREDIT FRAMEWORK	A system that facilitates the measurement and comparison of LEARNING OUTCOMES achieved in the context of different qualifications, PROGRAMMES OF STUDY and learning environments.
CREDIT LEVEL	An indicator of the relative demand of learning and of learner autonomy. It can be based on the year of study and/or on course content (e.g., Basic/Advanced/Specialised).
CREDIT TYPE	An indicator of the status of course units in the PROGRAMME OF STUDY. It can be described as Core (major course unit), Related (unit providing instrument/support) and Minor (optional course unit).
CYCLE	A course of study leading to an academic DEGREE. One of the objectives indicated in the Bologna Declaration is the "adoption of a system based on two main cycles, undergraduate and graduate." DOCTORAL STUDIES are generally referred to as the third cycle.
DEGREE	Qualification awarded by a higher education institution after successful completion of a prescribed PROGRAMME OF STUDY. In a CREDIT ACCUMULATION system the programme is completed through the accumulation of a specified number of credits awarded for the achievement of a specific set of LEARNING OUTCOMES.
DESIGN WORKSHOP	Short intensive design project carried out over a limited timescale, usually one or two days without supervision.
DIPLOMA SUPPLEMENT	The Diploma Supplement is an annex to the original qualification designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the holder of the qualification. It is based on the model developed by the European Commission, Council of Europe and UNESCO/CEPES. It improves the international transparency and the academic/professional recognition of qualifications
DISTANCE LEARNING	Form of course unit delivery where students are not bound to a specific time or place in order to participate in the course, but instead are required to work through prepared material and exercises in their own time and with a minimal of supervision.
DOCTORAL STUDENT	See RESEARCH STUDENT
DOCTORAL STUDIES or DOCTORAL PROGRAMME	Course of study leading to a DOCTORATE.
DOCTORATE or DOCTORAL DEGREE	A high level qualification which is internationally recognised as qualifying someone for research or academic work. It will include a substantial amount of original research work which is presented in a THESIS. It is generally referred to as the degree awarded after completion of third cycle studies.

Term	Explanation
ECTS	European Credit Transfer System - A system for increasing the transparency of educational systems and facilitating the mobility of students across Europe through credit transfer. It is based on the general assumption that the global workload of an academic year of study is equal to 60 credits. The 60 credits are then allocated to course units to describe the proportion of the student workload required to achieve the related LEARNING OUTCOMES. Credit transfer is guaranteed by explicit agreements among the home institution, the host institution and the mobile student.
ELECTIVE COURSe	A course to be chosen from a predetermined list.
EXAM	Normally formal written and/or oral test taken at the end of a course unit or later in the academic year. Other assessment methods are also in use. Tests within the course unit are classed as CONTINUOUS ASSESSMENT.
EXCURSION	Course unit consisting of a field visit or visits, usually lasting for a number of days. Preparatory research and/ or the writing of a report is usually also involved. [Synonym: "Field Trip"]
FIRST DEGREE	First HIGHER EDUCATION qualification taken by the student. It is awarded after the successful completion of first CYCLE studies which, according to the Bologna Declaration, should normally last a minimum of three years or 180 ECTS credits.
GRADE	A final evaluation based on the overall performance in the PROGRAMME OF STUDY
GRADUATE or POST-GRADUATE STUDIES	A course of study following a FIRST DEGREE and leading to a SECOND DEGREE
GRANT or SCHOLARSHIP or FELLOWSHIP	Payment made to some or all students to cover fees and/or living expenses. It may come from national/local governments or charitable foundations or private companies.
GROUP PROJECT	A piece of work given to a group of students which needs co-operative work for completion. This work may be assessed either individually or as a group.
HIGHER EDUCATION	PROGRAMMES OF STUDY which may be entered by students holding either a qualified school leaving certificate of an upper secondary school after a minimum of twelve years of schooling or other relevant professional qualifications. Providers may be universities, universities of professional studies, higher education institutions or colleges.
ICT TEACHING	Teaching/studying/learning making use of information and communication technology. It usually takes place in e-learning environments.
INDEPENDENT PROJECT	A piece of work given to a single student or a group of students for completion. This work will be assessed either individually or as a group.
INTENSIVE COURSE	A short full time course of one to four weeks concentrating on a particular topic. It may take place at another institution or in a summer school.
INTERNSHIP	Extended period of supervised residency on the part of the student in a design or planning office or in a nursery or contracting firm to gain practical work experience. Frequently accompanied by the keeping of a diary and/or the preparation of a report. [Synonym: "Office or Practical Experience"]

Term	Explanation
LEARNING OUTCOMES	Statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of a process of learning. Learning outcomes are distinct from the aims of learning, in that they are concerned with the achievements of the learner rather than the overall intentions of the teacher. Learning outcomes must be accompanied by appropriate ASSESSMENT CRITERIA which can be used to judge that the expected learning outcomes have been achieved. Learning outcomes, together with assessment criteria, specify the minimum requirements for the award of CREDIT, while marking is based on attainment above or below the minimum requirements for the award of credit. Credit accumulation and transfer is facilitated if clear learning outcomes are available to indicate with precision the achievements for which the credit will be awarded
LECTURE	Provision of content by presentation and explanation (possibly including demonstration) by a lecturer.
LECTURE COURSE	Form of teaching in which information is imparted, usually verbally and visually, to a large group of students with a minimum of interaction.
MARK	Any numerical or qualitative scale used to describe the results of ASSESSMENT in an individual COURSE UNIT or MODULE.
MODULE	See COURSE UNIT
NOTIONAL LEARNING TIME	The average number of hours a student will take to achieve specified LEARNING OUTCOMES and gain CREDITS.
OPTIONAL COURSE	A COURSE UNIT or MODULE which may be taken as part of a PROGRAMME OF STUDY but is not compulsory for all students.
ORAL PRESENTATION	A verbal presentation to a lecturer and possibly other students by an individual student. It may be on a topic researched by the student in the published literature or a summary of project work undertaken.
POSTDOCTORAL RESEARCHER	A recently qualified researcher with a DOCTORATE, who will probably be employed on a short term contract.
POSTER	A written presentation of some work on a display which can be read by a number of people.
PRACTICAL WORK	Teaching form involving practical exercise(s) or undertaken by students, either individually or in groups, involving direct supervision of a group of students in the performance of a pre-defined task or tasks of the use of specific techniques. [Synonym: "Laboratory Exercise"]
PRIVATE STUDY	Teaching mode in which students are given a programme of reading and/or exercises to work through without any specific input from the teacher.
PROGRAMME OF STUDY	An approved set of COURSE UNITS or MODULES recognised for the award of a specific DEGREE. A programme of study can also be defined through the set of LEARNING OUTCOMES to be achieved for the award of a specified number of CREDITS.
QUALIFICATION	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards

Term	Explanation
RECOGNITION (PROFESSIONAL)	The way a profession is regulated on a European or a national level according to a set of standards of the recognizing organisation. The effect of this recognition varies, depending on the legal authorization of the recognizing body. On a national level it may result in the right to use the title of landscape architect, the right to work as a landscape architect or to work a specified type of commissions or to be allowed to formally “sign” a plan.
RESEARCH	A careful study or investigation based on a systematic understanding and critical awareness of knowledge. The word is used in an inclusive way to accommodate the range of activities that support original and innovative work in the whole range of academic, professional and technological fields, including the humanities, and traditional, performing, and other creative arts. It is not used in any limited or restricted sense, or relating solely to a traditional ‘scientific method’.
RESEARCH STUDENT OR DOCTORAL STUDENT	A student seeking to obtain a degree primarily on the basis of research.
RESIT EXAMS	Additional EXAM session offered to students who have not been able to take or pass their exams on the first dates scheduled.
SECOND DEGREE	Second HIGHER EDUCATION QUALIFICATION taken by a student after the FIRST DEGREE. It is awarded after the successful completion of second CYCLE studies and may involve some research work.
SEMINAR	A period of instruction based on written or oral contributions by the learners. Small group teaching mode, in which short papers on subject areas defined by the teacher are prepared by individual students or small groups and presented to the whole group.
SKILLS AND COMPETENCES	The skills and COMPETENCES developed as an outcome of the learning process can be divided into ‘subject-area related’ and ‘generic’.
STUDIO	Form of teaching in which students are involved in the development of design or planning proposals working to a given brief or one which they develop themselves, either individually or in small groups. Supervision, involving consultations and intermediate presentations, takes place on a regular but flexible basis by one or more staff. [Synonym: “Project Work”]
SUPERVISOR	Member of academic staff of the University who monitors the progress of a DOCTORAL STUDENT, provides advice and guidance, and may be involved in assessing the THESIS. S/he will normally be a member of the research group where the student is working.
THESIS	A formally presented written report, based on independent research work, which is required for the award of a degree (generally SECOND DEGREE or DOCTORATE).
TUITION FEES/ TUTORIAL FEE	Charges made by university to student for teaching and/or supervision
TUNING	Developing agreement and harmony by combining single sounds into a common “tune” or pattern of sounds. In the case of the Tuning project, it relates to higher education structures in Europe and recognises the diversity of traditions as a positive factor in the creation of a dynamic common HE area.

Term	Explanation
TUTORIAL	Form of teaching in which a small group of students, possibly only one, are taught on a one to one basis (often used in relation with individual dissertations). A period of instruction given by a tutor aimed at revising and discussing materials and topics presented at LECTURES.
UNDERGRADUATE STUDIES	A course of study leading to a FIRST DEGREE
WORKLOAD	All learning activities required for the achievement of the LEARNING OUTCOMES (i.e., lectures, practical work, information retrieval, private study, etc.).
WORKSHOP	A supervised session where students work on individual tasks and receive assistance and direction when needed.

Appendix B: Development of landscape architecture as an academic discipline

Until the early 20th century the education of professionals working in the field of landscape architecture had been a varied affair. Either they trained as gardener's apprentices or in higher schools of gardening/horticulture. Alternatively, architects or engineers, who had obtained some knowledge about plants, by working with gardeners, developed the field in practice. In 1824 the Prussian government appointed Peter Joseph Lenné to establish the first formal school for 'landscape gardening' near Berlin, Germany; but it was not until 1919 that the first European university degree programme was set up, in Aas, near Oslo, Norway. The 'New World' was in advance of Europe, with the first American landscape architecture degree programme being established at Harvard University in 1899. The growing scale and complexity and perceived social importance of the planning, design and management of green space and landscapes, together with its erosion resulting from urbanisation, industrialisation and changes in agricultural and forestry practices led to increasing pressures to establish formal programmes of university education and research in landscape architecture. Landscape architecture curricula in Europe can be seen as developing in several phases:

1. 1919 – 1948, Pioneers – in a small number of countries, one university in the country is beginning to offer landscape architecture education;
2. 1949 – 1973; Boom Years – several new landscape architecture programmes are starting up in many countries in Europe;
3. 1974 – 1991; Consolidation – few new programmes are established, but with increasing numbers of staff members and enrolled students;
4. 1991 – 2003; Second Wave – new landscape architecture programmes are established, after the fall of the Iron Curtain;
5. Currently Further Consolidation and Coordination – the Bologna Process takes effect.

Brief explanation (for more detail, please refer to "Rare Knowledge" report²²):

1. The pioneering phase ended about 1948/9: In this period the first university courses were set up in a number of European countries. For example, the first landscape architecture programme in Poland was established in 1930 at what is now the Warsaw University of Life Sciences.

2. A period of significant growth in new degree programmes took place from 1949/50 until the early 1970s. This boom was driven by the social needs of post-war reconstruction, together with a growing environmental concern. Again, a gradient is visible in the establishment of landscape architecture programmes between North-West Europe, where the discipline developed strongly, and the east and south

²² See: "Rare Knowledge" - from the Modernist Period of Landscape Architecture Education; summary for Final Report to LE:NOTRE 2

of Europe, where fewer landscape architecture programmes were established.

3. Slower progress in establishing new programmes was made during the phase of consolidation; however, it was in this time that the interest of young people in choosing landscape architecture as their field increased significantly, and numbers of enrolled students grew - as did the scope and scale of the landscape issues dealt with.

4. The fall of the Iron Curtain, in 1989, resulted in the (re)establishment of several new countries. Starting with 1991, several new university degree programmes were established. While most of these are located in East and South-East Europe, including the Baltic, former Yugoslavia, and Poland, some new programmes were also set up, for the first time, in some of the former Western European countries, including in Austria, Italy, Spain and Iceland.

5. Currently, a second phase of consolidation may be observed, as schools are implementing policies of the Bologna Agreement and, since 2008, of the European Qualification Framework (EQF), of the Council of Europe and the European Union. Adding further momentum, and a special social quality, schools and departments of landscape architecture are encouraged to also implement policies of the European Landscape Convention.

The expanding profession, and growing numbers of students and professionals in Europe, are engaged in an increasing volume of landscape research. Results are discussed in academic, professional and technical publications, and a complementary number of conferences and international exchanges.

The period of the establishment of the single European market also saw the setting up of European organisations representing both the profession (EFLA - the European Foundation for Landscape Architecture in 1989) and the academic discipline of landscape architecture (ECLAS – the European Council of Landscape Architecture Schools in 1991).

Appendix C. European Credit Transfer System, ECTS²³

Tuning Line 3: ECTS

The European Credit Transfer System (ECTS) was initially set up in 1989 as a pilot scheme within the framework of the Erasmus programme. Its aim at that time was to facilitate the recognition of study periods undertaken abroad by mobile students through the transfer of credits. The Signatory States in the Bologna Process have identified ECTS as one of the cornerstones of the European Higher Education Area. A large number of countries have adopted ECTS by law as an accumulation system for their own higher education systems and others are in the process of doing so. In some countries ECTS has become a requirement for accreditation.

ECTS makes teaching and learning more transparent and facilitates the recognition of studies (formal, non-formal and informal). The system is used across Europe for credit transfer (student mobility) and credit accumulation (learning paths towards a degree). It also informs curriculum design and quality assurance.

ECTS credits are based on the workload students need in order to achieve expected learning outcomes. Learning outcomes describe what a learner is expected to know, understand and be able to do after successful completion of a process of learning. They relate to level descriptors in national and European qualifications frameworks. Workload indicates the time students typically need to complete all learning activities (such as lectures, seminars, projects, practical work, self-study and examinations) required to achieve the expected learning outcomes.

Credits are allocated to entire qualifications or study programmes as well as to their educational components (such as modules, course units, dissertation work, work placements and laboratory work). The number of credits ascribed to each component is based on its weight in terms of the workload students need in order to achieve the learning outcomes in a formal context. Credits are awarded to individual students (full-time or part-time) after completion of the learning activities required by a formal programme of study or by a single educational component and the successful assessment of the achieved learning outcomes.

Credits may be accumulated with a view to obtaining qualifications, as decided by the degree-awarding institution. If students have achieved learning outcomes in other learning contexts or timeframes (formal, non-formal or informal), the associated credits may be awarded after successful assessment, validation or recognition of these learning outcomes.

Credits awarded in one programme may be transferred into another programme, offered by the same or another institution. This transfer can only take place if the degree-awarding institution recognises the credits and the associated learning outcomes. Partner institutions should agree in advance on the recognition of periods of study abroad. Credit transfer and accumulation are facilitated by the use of the ECTS key documents (Course Catalogue, Student Application Form, Learning Agreement and Transcript of Records) as well as the Diploma Supplement.

²³Tuning, Line 3

One of the main innovations of Tuning has been to link learning outcomes, competences and ECTS workload based credits. As part of Tuning I it was necessary to develop a new concept for ECTS. This concept implies the change of the European Credit Transfer System into a European Credit Transfer and Accumulation System, in which credits no longer have a relative value but have an absolute one and are linked to learning outcomes. In the new ECTS system the award of credits depends on full achievement of the desired learning outcomes for a unit or module. The philosophy as well as its features is reflected in the paper *Educational Structures, Learning Outcomes, Workload and the Calculation of ECTS Credits*, which formed the basis for the new ECTS Users' Guide published by the European Commission in the summer of 2004.

The European Credit Transfer and Accumulation System (ECTS) is a student-centred system based on the student workload required to achieve the objectives of a programme of study. These objectives should preferably be specified in terms of learning outcomes and competences to be acquired.

- *ECTS is based on the principle that 60 credits measure the workload of a full-time student during one academic year. The student workload of a full-time study programme in Europe amounts in most cases to around 1500-1800 hours per year and in those cases one credit stands for around 25 to 30 working hours.*
- *Credits in ECTS can only be obtained after successful completion of the work required and appropriate assessment of the learning outcomes achieved. Learning outcomes are sets of competences, expressing what the student will know, understand or be able to do after completion of a process of learning, long or short.*
- *Student workload in ECTS consists of the time required to complete all planned learning activities such as attending lectures, seminars, independent and private study, preparation of projects, examinations, and so forth.*
- *Credits are allocated to all educational components of a study programme (such as modules, courses, placements, dissertation work, etc.) and reflect the quantity of work each component requires to achieve its specific objectives or learning outcomes in relation to the total quantity of work necessary to complete a full year of study successfully.*

Credit may be allocated to all types of study programmes, irrespective of their length, composition or nature. Programmes may consist of year-long courses or shorter modules. They may cover work placements and research. They may be first, second or third cycle. Credits can also be used for stand-alone courses, such as modules offered to learners not engaged in a full cycle programme of study.

The main changes being brought about within degree programmes as a result of the Bologna Process, in most countries these have resulted in the re-structuring of degree programmes to create integrated landscape architecture degree programmes with duration of 5 or 6 years, taking the form of two separate cycles. The first of these (mostly bachelor programmes) is of 180 or occasionally 240 ECTS units in length. In most cases the 2nd cycle programmes have a length of 120 ECTS units, while very few have only 60 ECTS units. These mostly follow on from 240 ECTS bachelor programmes to give the same overall length of the whole degree programme. A few institutions have preserved an integrated master programme of 300 or 360 ECTS.

Appendix D. Dublin descriptors for 1st, 2nd and 3rd cycle programs

Aspect	1st cycle	2nd cycle	3 rd cycle
Knowledge and understanding	Is supported by advance text books with some aspects informed by knowledge of their field of study	Provide as basis or opportunity for originality in developing or applying ideas often in a research context	[includes] a systematic understanding of their field of study and mastery of the methods of research* associated with that field.
Applying knowledge and understanding	Through devising and sustaining arguments	Though problem solving abilities (applied) in new or unfamiliar environments within broader (or multi-disciplinary) context	[is demonstrated by the] ability to conceive, design, implement and adapt a substantial process of research* with scholarly integrity. [is in the context of] a contribution that extends the frontier of knowledge by developing a substantial body of work some of which merits national or international refereed publication.
Making judgments	Involves gathering and interpreting relevant data	Demonstrates the ability to integrate knowledge and handle complexity, and formulate judgments with incomplete data	[requires being] capable of critical analysis, evaluation and synthesis of new and complex ideas.
Communication	(Of) information, ideas, problems and solutions	(of) their conclusions and the underpinning knowledge and rationale (restricted scope) to specialist and non-specialist audiences (monologue) .	With their peers, the larger scholarly community and with society in general (dialogue) about their areas of expertise (broad scope).
Learning skills	Have developed those skills needed to study further with a high level of autonomy	Study in a manner that may be largely self-directed or autonomous	Expected to be able to promote, within academic and professional contexts, technological, social or cultural advancement.

Appendix E. Guidelines for accreditation and validation of landscape programmes

Quality assurance is a process that is carried out in several levels and for different aspects of education. The process consists of a continuous evaluation and improvement of the programme as a whole and each of the course units. In order to be effective all members of staff should be involved in quality assurance and feel the need to contribute in an explicit way to quality enhancement. Quality assurance is based on a clear definition of the profile of the programme and its core competences, generic competences and subject specific competences.

It should be clarified how the learning outcomes of the programme are related to the course units that are the building blocks. The scheme below explains the quality assurance process. Quality assurance can be divided in two processes: external quality control and internal quality assurance.

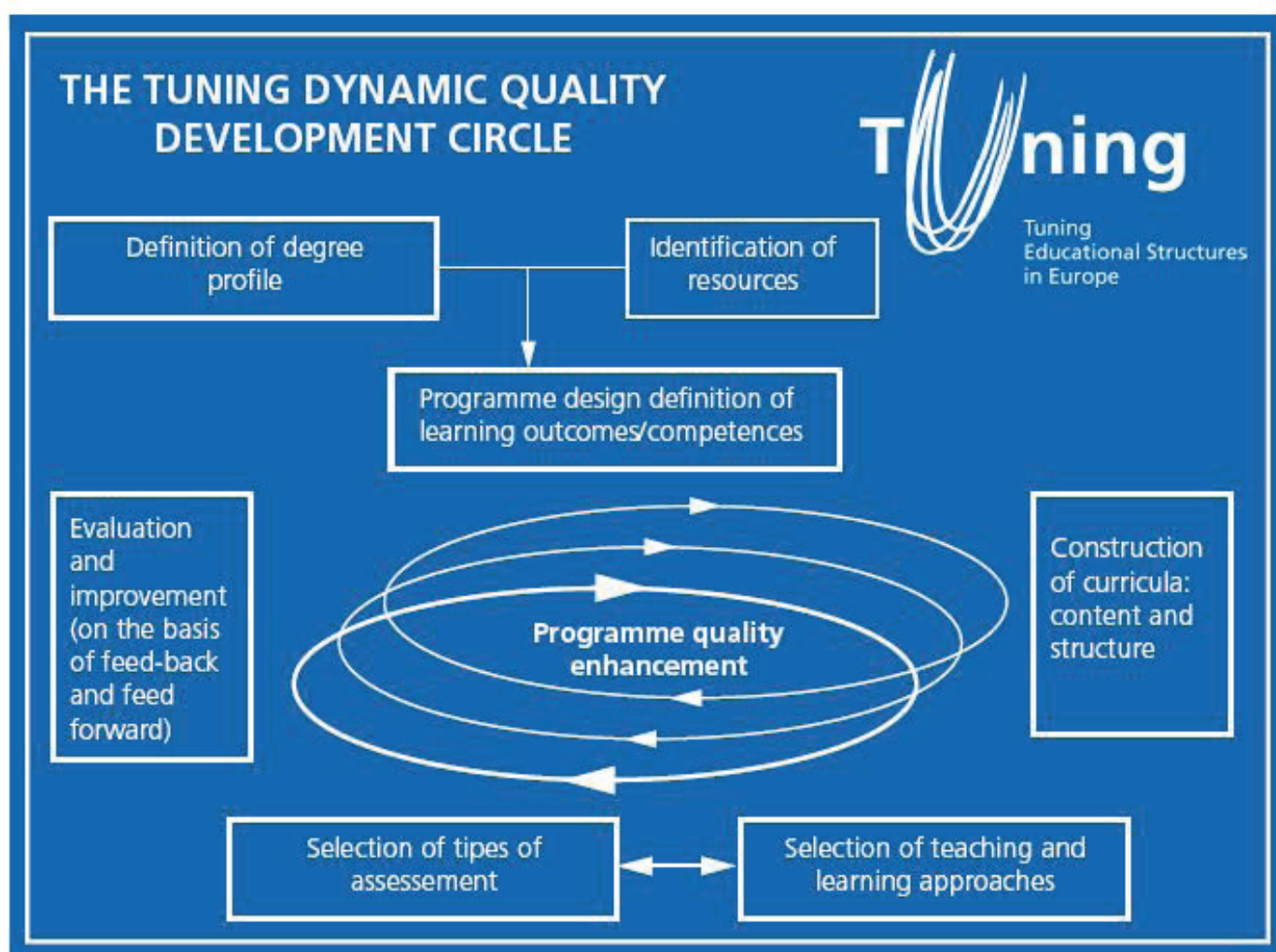


Fig. 5: The Tuning Dynamic Quality Development Circle
(Source: Tuning 2005 pages 112/113)

External quality control: peer review, validation and accreditation

External quality control mainly focuses on degree programmes and institutions as a whole and the final exams of each programme. Depending on national laws and regulations degree programmes are formally accredited by the government (Ministries of Education), national accreditation organisations, or by the universities itself.

For the process of accreditation independent organisations prepare the accreditation; these quality control organisations are called validating organisations. These act according to the guidelines of the formal accreditation organisation. At the beginning of a new accreditation cycle – in most countries this is done every 5 or 6 years – the programme has to write a Self Evaluation Report. Section 8.4 presents guidelines that are relevant for landscape architecture programmes.

In the guidelines for quality assurance and accreditation peer review plays an important role. This especially counts for the assessment of the final thesis or final project of each degree programme. It is advised that academics of other schools and representatives of professional practice take part in this assessment. These assessors should reflect on the quality of individual students and also on the quality of the programme as a whole. The results of this assessment can be used in the Self Evaluation Reports of the programme.

Because the accreditation process is often carried out for a group of programmes, special attention should be paid whether experts in the field of landscape architecture take part in the validating committees. For the international context ECLAS aims to help organise a panel of experts who can advise or even take part in national and regional accreditation processes.

Internal quality control

Internal quality control takes place on course, semester and programme level. Schools that take quality assurance seriously should address this both on a strategic and on a day to day level. For the institute or department a quality assurance committee can operate that analyses the outcomes of quality surveys and set the agenda for quality enhancement for the programme as a whole. For separate semesters or course units students should fill out surveys on the learning outcomes, teaching modes and way of assessment. The guidelines for internal quality assurance for higher education are presented in the box below.

1.1 Policy and procedures for quality assurance: Institutions should have a policy and associated procedures for the assurance of the quality and standards of their programmes and awards. They should also commit themselves explicitly to the development of a culture which recognises the importance of quality, and quality assurance, in their work. To achieve this, institutions should develop and implement a strategy for the continuous enhancement of quality. The strategy, policy and procedures should have a formal status and be publicly available. They should also include a role for students and other stakeholders.

1.2 Approval, monitoring and periodic review of programmes and awards: Institutions should have formal mechanisms for the approval, periodic review and monitoring of their programmes and awards.

1.3 Assessment of students: Students should be assessed using published criteria, regulations and procedures which are applied consistently.

1.4 Quality assurance of teaching staff: Institutions should have ways of satisfying themselves that staff involved with the teaching of students is qualified and competent to do so. They should be available to those undertaking external reviews, and commented upon in reports.

1.5 Learning resources and student support: Institutions should ensure that the resources available for the support of student learning are adequate and appropriate for each programme offered.

1.6 Information systems: Institutions should ensure that they collect, analyse and use relevant information for the effective management of their programmes of study and other activities.

1.7 Public information: Institutions should regularly publish up to date, impartial and objective information, both quantitative and qualitative, about the programmes and awards they are offering.

Source: Standards and Guidelines for Quality Assurance in the European Higher Education Area; European Association for Quality Assurance in Higher Education, 2005, Helsinki

Appendix F. Professional Recognition and Accreditation of Landscape Architecture Degrees

Professional recognition and accreditation for landscape architecture degrees exists on a European level and a national level. On the European level there are two processes: the principles of professional recognition laid out in the Professional Qualifications Directive (Directive 2005/36/EC) of the EU and the professional educational recognition by EFLA, the European Region of IFLA. On the national level recognition and accreditation differ according to the rules and regulations in each country. The effects and consequences of professional recognition vary greatly.

Recognition on a European level

Professional Qualifications Directive

The Professional Qualifications Directive came into force in October 2005. Article 47 of the EU treaty specifies that directives shall be issued for the mutual recognition of diplomas. Based on the fact that the profession of landscape architecture is regulated in some of the EU countries landscape architecture can be seen as a regulated profession. Professional recognition aims to allow a holder of a diploma awarded in one member state to be entitled to practice the profession in any of the other countries; what counts are the qualifications specified in the diploma.

If a profession is regulated it is up to each member state; whether and how it regulates a profession / professional activity or not. If a member state has not made special regulations for the profession of landscape architecture, then all EU citizens can carry out professional activities on the same conditions as the citizens of the member state, unless the activities are regulated as part of another profession.

Recognition by IFLA/EFLA

EFLA, the European Region of IFLA, recognises programmes for landscape architecture from a professional point of view. For this it has developed a set of guidelines for the content of programmes and a procedure for recognition. The guidelines for the content of programmes can be found on the website of EFLA (www.efla.org). Recognition is possible for first cycle programmes as well as for second cycle programmes. The first cycle is recognised as a feeder programme to a second cycle. The most important requirements are:

- a minimum duration of 4 years for a full time landscape architecture programme;
- making sure that the content of the programme relates to defined areas of knowledge;
- a minimum of 50% of studio teaching in which students in an integral way work on design and/or planning projects.

The procedure is as follows:

- Each national association proposes one or more programmes for recognition to EFLA after assessing whether the programme meets the requirements of the guidelines. If it cannot meet the guidelines, or fails to do so, individual institutes of higher education may apply to EFLA independently.
- The recognition panel, consisting of members of the EFLA Education committee, evaluates the applications.
- The panel can decide whether it is necessary to visit the school (administration, teachers, and students) of the programme in order to get an adequate insight in the content and quality of the programme. For this EFLA consults the National Association for Landscape Architecture of the country where the programme is delivered. It is also possible to ask for additional information on the content of the programme.
- When there is a positive evaluation of the programme the EFLA Assembly makes a formal decision to recognise the programme.

Effects of recognition by IFLA/EFLA

Although there is no direct formal effect of the professional recognition by EFLA, this recognition is important for degree programmes because it has an effect on formal accreditation and validation. In many countries one of the criteria of the evaluation of the programmes is whether the programme is recognised within the international context.

The relation between the Professional Qualification Directive for General System professions and the EFLA/IFLA recognition process is still in the process of discussion. The aim of EFLA in collaboration with ECLAS is to develop a Common Education Platform based on a comparison of two thirds of the countries in which the profession of landscape architect is regulated. On the website of the EU (<https://webgate.ec.europa.eu/regprof>) only Germany, Iceland, The Netherlands and Slovakia show as countries where the profession is state regulated and where there are state registers. From the EFLA survey the same is the case in Austria, the Czech Republic, Italy, Hungary and Slovenia. The UK has a special position because here there is a Royal Charter that regulates the profession, but no state registration system.

Professional recognition at a national level

In Europe the title landscape architect varies in terms of its acceptance and its legal status. Generally, in North West Europe, landscape architecture is well established and recognised de facto by both public and private sector. In some countries, for instance Germany and The Netherlands, the title is protected while in Scandinavia and the UK anyone can use the title, but in fact the profession is well recognised. In Russia the usual title is “green engineer” and landscape architect has a lesser currency. In some countries,

where the title landscape architect is not officially recognised, support for future recognition is needed, including international organisations.

A rough idea of the level and de facto recognition and establishment of the profession can be gotten from the time since the foundation of the main national association of landscape architects; this varies from 1913, in the case of the oldest, the BDLA in Germany, to post 1945 in much of Central and Eastern Europe. For example, in Poland, from 1995 Landscape Architect is one of the professions included in the governmental Classification of the Occupations and Specialisations.

State Registers

Traditionally, the strongest status achieved for a profession is the legal protection of its titles and the inclusion into a state register. For landscape architecture, in many cases, this is done under the auspices of architecture chambers. By comparison, the position of landscape architecture in Europe is weaker than in some other continents. In North America, for example in the USA, state registration (or licensure) is a requirement in 49 of the 51 states. By contrast landscape architecture is a registered profession in nine of the 47 member states of the Council of Europe: Austria, Czech Republic, Cyprus, Iceland Italy, Germany, Hungary, The Netherlands, Slovakia, Slovenia and Turkey; negotiations to establish such registration status are reported to be underway in Portugal. In the United Kingdom landscape architecture is a regulated profession, however, the position is different than the rest of Europe. The professional body, the Landscape Institute, has a royal charter (of 1995), which means that its statutes and organisation have been vetted by a governmental organisation, the Privy Council; nevertheless, in the UK there is no state register.

In other countries, such as Poland for example, landscape architecture is a recognised profession; however, it is not yet registered and as such not protected. For clients to obtain building permits they need to contact other professionals who have pertinent state recognition. In Ireland, in 2005, a bill was introduced in the Daíl (the Irish Parliament) to register architects for the first time; this is something landscape architects would not object to, however, as originally drafted the bill would have barred landscape architects from using the word "architect" in their title. Indeed as initially drafted if an Irish landscape architect so called themselves then they would be been liable to a fine of € 5 000 or 12 months imprisonment and there would have been a situation of landscape architects in Northern Ireland being free to call themselves landscape architects while not so in the south. The Irish Landscape Architects, supported by EFLA, successfully argued for a change in the wording and the bill was changed to avoid this threat to landscape architecture as a professional title.

In France, since the end of 19th century, landscape architects operated under the title architecte-paysagiste (as in French speaking parts of Belgium, Switzerland and Canada) until the law of 1940 creating the "Ordre des Architectes" (Chamber of architects) and the subsequent law of 1977 protecting the title of architect; since then landscape architects in France have had to use the title paysagiste. In Spain the situation is more difficult than in France where landscape architecture has an accepted role at government level despite restrictions on the title. In Spain, because of the position of the traditionally influential role of architects and engineers, landscape architecture has been marginal. Architects and Engineers are members of the Colegio which are professional chambers organised at regional and national level and which

have a very powerful role. They are bodies, established during Franco's time, that are now under the supervision of the Ministry for Public Works and are regulated under a law of 1974. In consequence, landscape architects may not operate under the title *arquitecto paisajista*, which is used in Latin America, and so have to call themselves *paisajistas*. The *Asociacion Española de Paisajistas* (AEP) has to operate under this restriction and a direct way forward to be able to use the full title is not clear. Consequently the AEP has been following the model of those countries in Western Europe, being a majority, where the profession has established itself by promoting landscape architecture education, and creating a demand by exemplary work.

In Italy the situation for the profession appears to be good: since 2001 (DPR 328) there has been legal protection and recognition of landscape architecture with an *Ordine degli Architetti, Pianificatori, Paesaggisti, Conservatori* (Order of Architects, Planners, Landscapers and Conservationists) which is administered by the *Consiglio Nazionale degli Architetti, Pianificatori, Paesaggisti*. However, the problems are twofold: to become a member of the Order one must have a Master Degree and Masters Degrees in landscape architecture are very recent. Most landscape architects and members of the landscape architecture national association, AIAPP, do not have a Masters Degree. The role of landscape architects is being tackled at Provincial level.

Conclusions on professional recognition

The Professional Qualifications Directive acts as a framework for the regulation on a national level. One of the consequences is that special requirements are made for continuous education and a professional training after graduation. In countries where landscape architecture is regulated the criteria for recognition are in general a degree diploma of at least a 2nd cycle programme in landscape architecture or a 4-year professional degree in landscape architecture. In many countries an additional training of two years is required before one is formally recognised as a landscape architect.

Apart from graduation as landscape architects, it is also possible for individual professionals, at least in some countries such as The Netherlands, to pass an exam where the professional qualifications as a landscape architect are assessed by the state registration authority. The pre-requirements of the exam may consist of sending in a portfolio with project work. Graduation from this exam results in professional recognition according to the standards and regulations in that country.

The consequences of professional recognition vary from the right to call one a landscape architect, to obtain a specified type of commissions (e.g. commissions by the state), the right to work as a landscape architect, or the right to formally “sign” landscape plans and to obtain building permits on behalf clients.

Continuing professional development and the EQF

The EQF is a common European reference framework which links countries’ qualifications systems together, acting as a translation device to make qualifications more readable and understandable across different countries and systems in Europe. It has two principal aims: to promote citizens’ mobility between countries and to facilitate their lifelong learning. The Recommendation formally entered into force in April 2008. It sets 2010 as the recommended target date for countries to relate their national qualifications systems to the EQF, and 2012 for countries to ensure that individual qualification certificates bear a reference to the appropriate EQF level.

The EQF will relate different countries’ national qualifications systems and frameworks together around a common European reference – its eight reference levels. The levels span the full scale of qualifications, from basic (Level 1, for example school leaving certificates) to advanced (Level 8, for example Doctorates) levels. As an instrument for the promotion of lifelong learning, the EQF encompasses all levels of qualifications acquired in general, vocational as well as academic education and training. Additionally, the framework addresses qualifications acquired in initial and continuing education and training.

The eight reference levels are described in terms of learning outcomes. The EQF recognises that Europe’s education and training systems are so diverse that a shift to learning outcomes is necessary to make comparison and cooperation between countries and institutions possible. In the EQF a learning outcome is defined as a statement of what a learner knows, understands and is able to do on completion of a learning process. The EQF therefore emphasises the results of learning rather than focusing on inputs such as length of study. Learning outcomes are specified in three categories – as knowledge, skills and competence. This signals that qualifications – in different combinations – capture a broad scope of learning outcomes, including theoretical knowledge, practical and technical skills, and social competences.

