

# Analysis of principles and contents of university curricula carried out at the Faculty of Forestry of H. Kollataj's University of Agriculture in Krakow

## Part 2. Analysis of study curricula of the Faculty of Forestry

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ARTICLE

### Abstract

In this paper the author described and made analysis of forestry curricula currently offered at the Faculty of Forestry of the University of Agriculture in Krakow, Poland. The Faculty offers full-time and part-time undergraduate and graduate studies adjusted to Bologna Process requirements for potential forestry students. The full-time undergraduate study program lasts 7 semesters (2466 or 2464 contact hours) and offers 210 ECTS and full-time graduate program lasts 3 semesters (900 contact hours) and offers 90 ECTS. The part-time undergraduate study program offers 1460 contact hours and duration of the program is 8 semesters and part-time graduate program lasts 3 semesters (546 contact hours) and offers 90 ECTS.

**Key words:** forestry, curricula, university, Krakow, Poland

### Streszczenie

W pracy przedstawiono analizę programów studiów dostosowanych do wymogów Procesu Bolońskiego oferowanych aktualnie na Wydziale Leśnym dla potencjalnych studentów leśnictwa, zarówno studiów stacjonarnych, jak i niestacjonarnych.

Studia stacjonarne I stopnia (inżynierskie) oferują 2 Specjalności: Gospodarka Leśna (GL) oraz Ochrona Zasobów Leśnych (OZL), a w ramach Specjalności po 2 Specjalizacje wdrażane na 2 semestrze studiów i realizowane do końca studiów. Studia trwają 7 semestrów i obejmują, zależnie od Specjalności 2466 lub 2464 godzin, oferując 210 ECTS i tytuł zawodowy inżyniera. Studia stacjonarne II stopnia (magisterskie) trwają 3 semestry i obejmują 900 godzin zajęć oferując 90 ECTS oraz tytuł zawodowy magistra inżyniera.

Studia niestacjonarne I stopnia (inżynierskie) oferują Specjalność Gospodarka Leśna (GL), a w ramach tej Specjalności 2 Specjalizacje wdrażane od 2-go semestru studiów i realizowane do końca studiów. Studia trwają 8 semestrów i obejmują 1460 godzin oferując 210 ECTS i tytuł zawodowy inżyniera. Studia niestacjonarne II stopnia (magisterskie) trwają 3 semestry i obejmują 546 godzin zajęć oferując 90 ECTS oraz tytuł zawodowy magistra inżyniera.

W pracy zestawiono szczegółowe dane i dokonano analiz odnośnie ilości godzin zajęć (wykłady, ćwiczenia laboratoryjne, ćwiczenia terenowe) według rodzajów i form studiów, a także zaprezentowano oferowane na Wydziale elektywy i przedmioty do wyboru w języku polskim i w językach obcych (angielski i niemiecki).

## 1. Preface

The Bologna Process as a process of building European Higher Education Area (EHEA)<sup>1</sup> by making academic degree standards and quality assurance more comparable throughout Europe was signed in 1999 by Education Ministers from 29 European countries. Today, nearly all the European countries, except for Belarus and Montenegro, are members of EHEA. Poland participates in the Process from the very beginning, i.e. from 1999.

In European forest universities circles, as well as at Polish forest faculties, that Process was not construed enthusiastically because of some of its drawbacks. Finally, it was fully implemented and nowadays everybody is trying to discover its better side, i.e. its advantages.

For the first time the full-time time undergraduate Program started at the Faculty of Forestry in Krakow in academic year 2006/2007 and graduate Program in academic year 2009/2010.

## 2 Study curricula and teaching programs

Training students at the Faculty of Forestry is carried out in a form of full-time and part-time undergraduate and graduate studies.

In the scope of full-time studies the following study programs are carried out:

- full-time undergraduate (I cycle), since academic year 2006/2007
- full-time graduate study (II cycle), since spring semester of academic year - 2009/2010

In the range of part-time studies there are carried out the following study programs:

- part-time undergraduate (I cycle), since academic year 2007/2008
- part-time graduate study (II cycle), since spring semester of academic year 2011/2012, fully adjusted to full-time study program

### 2.1. Regular program courses

Regular courses, constituting the integral part of the offered Programs of study, are specified in tables. There were presented only full-time curricula for undergraduate programs with Specialties implemented in teaching practice, i.e. excluding others rarely or not chosen by students (tab. 1a-1b) and full-time curricula for graduate studies (tab. 2a -2b). The Faculty of Forestry also offers a wide list of „subjects to choose” or „elective subjects” (tab. 3a-3c).

### 2.2 Analysis of curricula

The analysis was prepared to a great extent at an angle of implementation of obligatory Teaching Standards in the field of Forestry (Regulation of... 2007).

#### 2.2.1 Full-time study programs

- full-time undergraduate (I cycle) study program. The program lasts 7 semesters and lets students obtain the Bachelor degree, i.e. in this case professional title of engineer (inżynier). Enrollment takes place on one field of study (major), i.e. Forestry, and directly on 2 Specializations, which are Forest Management (Gospodarka Lesna, GL) and Forest Resources Conservation (Ochrona Zasobów Leśnych, OZL). Furthermore in the scope of each Specialization students can choose from among 2 Specialities. In the scope of Forest Management Specialization those are: „Multiple-use Forestry” (Leśnictwo wielofunkcyjne, LW) (tab. 4) and „Technique and Execution of Forest Works” (Technika i wykonawstwo prac leśnych, TWL) (tab. 5). In the scope of Forest Resources Conservation Specialization students can also choose from among 2 Specialities: „Forestry in Natural Conditions” („Leśnictwo w warunkach naturalnych”, LN) (tab. 6) and

<sup>1</sup> <http://www.eua.be/eua-work-and-policy-area/building-the-european-higher-education-area.aspx>

„Forestry in Industrial Regions” („Leśnictwo w rejonach przemysłowych”, LP) (tab. 7). The choice is done during the 1<sup>st</sup> semester and Specialty is implemented at the opening of the 2<sup>nd</sup> semester. The curricula program includes 2466 contact hours on Specializations GL and 2464 contact hours on Specializations OZL. Independently on Specializations, the program offers 210 ECTS (during 7 semesters of study), which are quite evenly distributed for about 30 ECTS per semester. Apart from the possibility of choice of a whole set of subjects (courses) in the form of Specialty, which means a choice of 20% of the total number of didactic hours (i.e. 484 hrs of the total number of 2466 or 2466 hrs), there is an offer for some subjects to choose as elective subjects in modest range of 2% of total number of didactic hours. Specializations distinctly differ from each other because of the amount of subjects oriented to technical aspects (GL) or to nature and conservation (OZL). The difference is deepened by Specialties offered in the Program. The share of field training takes in 17-18% of the number of contact hours offered during the study period (Orzeł i in. 2009).

- full-time graduate (II cycle) study program. The program lasts 3 semesters and lets students obtain the Master degree, i.e. in this case professional title of Master engineer (magister inżynier). The Program was implemented in academic year 2009/2010. Enrollment takes place on one field of study (major), i.e. Forestry, but studies start from the beginning according to Specializations selected by interested students, i.e. Forest Management (Gospodarka Lesna, GL) (tab. 8) and Forest Resources Conservation (Ochrona Zasobów Lesnych, OZL) (tab. 9). Study Program covers 900 contact hours in both Specializations, and out of this 1/3 represent subjects to choose (30 hrs in foreign language are included as compulsory). Irrespective of the Specialization the Program offers 90 ECTS during 3-semester study period evenly distributed into about 30 ECTS per semester. Studies on „Forest Management” Specialization offer high number of main subjects (60%) and are characterized by the opportunity of elastic constructing of educational profile through the considerable offer of subjects to choose (27%). Lectures contain 43 % of total contact hours (30% was computed, but at least half of the teaching hours in the scope of „subjects to choose” is offered in form of lectures), and field training, constituting the development of skills acquired in course of undergraduate studies, covers 11% of total hours of the study time. Study on Specialization of „Forest Resources Conservation” are also characterized by a high number of main subjects (59%) and subjects to choose (27%) and 10% of study time is dedicated to practical field training. Lectures contain 45 % of total contact hours (32% was computed, but at least half of the teaching hours in the scope of „subjects to choose” is offered in form of lectures). Full-time graduate study is oriented on developing knowledge and skills acquired by engineers who graduated from forestry or forestry-related field of study. After graduation from this Program it is possible to further advance in the course of III cycle studies (doctorate study) or postgraduate studies.

### 2.2.2 Part-time study programs

- part-time undergraduate (I cycle) study program. The program lasts 8 semesters and lets students obtain the Bachelor degree, i.e. in this case professional title of engineer (inżynier). The study was implemented in the academic year of 2007/2008. Enrollment takes place on one field of study (major), i.e. Forestry, and directly only on one Specialization, i.e. Forest Management (Gospodarka Lesna, GL). There are 2 Specialties offered at the beginning of the 2<sup>nd</sup> semester: „Multiple-funcion Forestry” (Leśnictwo wielofunkcyjne, LW) (tab.10) and „Technique and Execution of Forest Works” (Technika i wykonawstwo prac leśnych, TWL) (tab.11). The choice is carried out during the 1<sup>st</sup> semester. The curricula program includes 1460 contact hours on Specialization „GL”. The basic subjects cover 17% of the total number of teaching hours and the main subjects include 60% of Program time. Lectures contain 38 % of total contact hours and

the share of field training hours is relatively high and constitutes 15% of the number of hours of the whole Program. The Program study on „Technique and Execution of Forest Works” Specialty (TWL) also offers 1460 contact hours. And here, similarly to the „Multiple-function Forestry” Specialty, basic subjects cover 17% of the total number of didactic hours and the main subjects include 61% of study time. The lectures also contain 38% of contact hours and a share of field training is slightly lower and covers 14% of contact hours of the study time. The Program is characterized by a possibility of making extensive choice in form of Specialty, which means the choice of 15% of subjects (226 hrs of total number of 1460 hrs). The Program covers 210 ECTS evenly distributed throughout 8-semester lasting studies, about 23-27 ECTS per semester. Apart from the opportunity to select the whole set of subjects as a Specialty, students can also choose some subjects as elective subjects in the entire offer of 4% of the total number of Program hours.

- part-time graduate (II cycle) study program. The program lasts 3 semesters and lets students obtain the Master degree, i.e. in this case professional title of Master engineer (magister inżynier). Enrollment takes place on one field of study (major), i.e. Forestry, but studies start from the beginning only according to the plan of the „Forest Management” Specialization (Gospodarka Lesna, GL) (tab.12). The Program embraces 546 contact hours, including 26% of the total number of hours in subjects to choose (conducted in Polish and foreign languages) and proposes 90 ECTS during 3-semester lasting studies rather evenly distributed (at the amount of about 30 ECTS per semester). The studies are characterized by high share of main subjects and are oriented on developing knowledge and skills acquired by engineers, who graduated from Forestry as the main field of study. After graduating, there exists an option of further personal upgrading in the course of III cycle (doctorate) or postgraduate studies.

### 3. Conclusions

The fact is that the number of forestry faculties students in Poland is increasing. In the academic year of 2009/2010 - 5735 persons studied forestry as a main field of study (major) and 2692 persons of that number were on full-time programs (47%) and 3043 on part-time programs (53%). In the academic year of 2008/2009 - 780 persons graduated from forestry as a major. However, the public forest sector employed only 377 persons (50% of the total number of graduates) (Rocznik... 2010). It is a kind of phenomenon, that employment is not increasing and the number of people interested in forestry major is rising. This augmentation is registered to a great extent because of newly established fields of forestry, mainly in public universities. This emerging trend is strengthening and will make the competition among the educational forest programs more severe and as a result may create favorable conditions for improvement of teaching quality. On the other hand, there is a threat of decreasing that quality depending on further market development tendency and the State policy.

The analyzed curricula and study programs at the Faculty of Forestry of the University of Agriculture in Krakow, offer a wide spectrum of educational possibilities for the future staff of foresters. One should pay a particular attention to relatively high share of practical aspects in form of field training. However, in the context of evident tendency and the need for engineering personnel with great practical experience, one can experience unsatisfied feeling. Yet, one of the options can be enriching the training through an offer of an integrated course of field training, the best of all organized as an international exchange of students and academic teachers.

It seems to be very important to conduct further broadening and intensification of contacts and students and academic staff exchange within the framework of international programs, like Erasmus, CEEPUS, or others.

On the basis of the above analysis one can draw the following conclusions with reference to didactic tasks for the near future:

- One should dynamize international cooperation within the frame of European Union through organization of consortia of didactic nature.
- One should tend to a more close integration of offered study curricula with curricula of selected forest universities in EU, owing to strong efforts to make it possible for our students to obtain double diplomas (of local and foreign university). Such a policy will enrich both partners extending for both parties the opportunity of employment on the vast national and foreign markets.
- It is worth recognizing market chances of employment of forest graduates of the III cycle (with Ph D degree) (Dąbrowa-Szefler2006) and, as far as possible, make efforts to create a competitive educational offer in that respect.

Tab.1a. List of subjects according to types and forms of studies, specializations and specialties. Full-time undergraduate (I cycle) study Specialization in Forest Management (Gospodarka Lesna, GL), Specialty „Multiple-function Forestry” (Leśnictwo wielofunkcyjne, LW) (1)

Item number	Course name	Number of hours of common content				Number of hours of Specialty „Multiple-function Forestry” content				Total number of hours LW
		Lectures	Laboratory classes	Field training	Together Common content	Lectures	Laboratory classes	Field training	Together Specialty „Multiple-function Forestry” content (LW)	
1	Safety and Health at Work	4			4			0	4	
3	Forest Botany and Dendrology	30	20		50			0	50	
4	Chemistry	10	20		30			0	30	
5	Physics	10	20		30			0	30	
6	Forest Surveying	15	18		33			0	33	
7	Foreign language		30		30			0	30	
8	Mathematics	15	15		30			0	30	
9	Information Technology		30		30			0	30	
10	Physical Education		30		30			0	30	
11	Forest Zoology	15	19		34			0	34	
	<b>Total semester 1</b>	<b>99</b>	<b>202</b>	<b>0</b>	<b>301</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>301</b>	
12	Forest Botany and Dendrology			12	12		22	6	28	40
13	Physiology of Woody Plants	25	30		55			0	55	
14	Forest Surveying			42	42			0	42	
15	Forest Soil Science	36	16	6	58		10	12	22	80
16	Foreign language		30		30			0	30	
17	Forest Climatology	12	17	0	29		3	12	15	44
18	Technical Mechanics				0			0	0	

19	Statistics	12	20		32				0	32
20	Physical Education		30		30				0	30
	<b>Total semester 2</b>	<b>85</b>	<b>143</b>	<b>60</b>	<b>288</b>	<b>0</b>	<b>35</b>	<b>30</b>	<b>65</b>	<b>353</b>

Tab. 1a. List of subjects according to types and forms of studies, specializations and specialties. Full-time undergraduate (I cycle) study Specialization in Forest Management (Gospodarka Lesna, GL), Specialty „Multiple-function Forestry” (Leśnictwo wielofunkcyjne, LW) (2)

21	General Building				0				0	0
22	Forest Mensuration	20	16		36				0	36
23	Ecology	12	18		30				0	30
24	Forest Entomology	34	30		64				0	64
25	Forest Pathology	30	14		44				0	44
26	Introduction to Geomatics in Forestry	20	25		45				0	45
27	Hydrology and Land Melioration Equipment	20	20		40	10	10		20	60
28	Foreign language		30		30				0	30
29	Forest Products	20	20		40				0	40
30	Forest Site Classification	10	14		24				0	24
	<b>Total semester 3</b>	<b>166</b>	<b>187</b>	<b>0</b>	<b>353</b>	<b>10</b>	<b>10</b>	<b>0</b>	<b>20</b>	<b>373</b>
31	Forest Mensuration			24	24				0	24
32	Forest Site Classification			6	6				0	6
33	Road Building in Forestry	18	16	12	46		8	12	20	66
34	Ecological Basics of Silviculture	20	22	8	50				0	50
35	Forest Entomology						16	12	28	28
36	Forest Pathology			8	8		17	8	25	33
37	Foreign language		30		30				0	30
38	Science of Forest Mechanics	20	24	6	50		14	6	20	70
39	Timber Harvesting	34	18		52				0	52
40	Forest Reclamation				0	12	10	8	30	30

41	Forest Products	14	20	18	52			0	52	
	<b>Total semester 4</b>	<b>106</b>	<b>130</b>	<b>82</b>	<b>318</b>	<b>12</b>	<b>65</b>	<b>46</b>	<b>123</b>	<b>441</b>

Tab. 1a. List of subjects according to types and forms of studies, specializations and specialties. Full-time undergraduate (I cycle) study Specialization in Forest Management (Gospodarka Leśna, GL), Specialty „Multiple-function Forestry” (Leśnictwo wielofunkcyjne, LW) (3)

42	Forest Economics	15	25		40		10	10	50	
43	Ergonomics and Work Safety	15	15		30			0	30	
44	Wildlife Management	15	15	6	36			0	36	
45	Seed and Nursery Production, Forest Genetics	34	42		76			0	76	
46	Forest Protection	15	15		30	14	16	30	60	
47	Timber Harvesting			24	24	4	16	12	56	
48	Forest Yield Science	10	8	12	30			0	30	
49	Silviculture	20	30		50			0	50	
	<b>Total semester 5</b>	<b>124</b>	<b>150</b>	<b>42</b>	<b>316</b>	<b>18</b>	<b>42</b>	<b>12</b>	<b>72</b>	<b>388</b>
50	Forest Protection			12	12			0	12	
51	Ecology of animal population				0	8	6	6	20	
52	Elective courses	30			30			0	30	
53	Silviculture	20	6	24	50		12	30	42	
54	Humanities courses**	34			34			0	34	
55	Forest Management	30	22	24	76		10	24	34	
56	Seed and Nursery Production, Forest Genetics			24	24			0	24	
57	Forest Transportation	20	20	12	52			0	52	
	<b>Total semester 6</b>	<b>134</b>	<b>48</b>	<b>96</b>	<b>278</b>	<b>8</b>	<b>28</b>	<b>60</b>	<b>96</b>	<b>374</b>



58	Forest Education				0	9		6	15	15
59	Elective courses	30			30				0	30
60	Maintenance and Operation of Machines				0	4	6		10	10
61	Forest Products Marketing				0	5	10		15	15
62	Computer Science in Forestry (SILP)		40		40				0	40
63	Nature Protection				0	20			20	20
64	Environmental Protection	12			12		10	8	18	30
65	Humanities courses**	26			26				0	26
66	Diploma Seminar				0		30		30	30
67	Management in Forest Enterprise	10	10		20				0	20
	<b>Total semester 7</b>	<b>78</b>	<b>50</b>	<b>0</b>	<b>128</b>	<b>38</b>	<b>56</b>	<b>14</b>	<b>108</b>	<b>236</b>
	<b>Total full-time undergraduate study, GL (LW)</b>	<b>792</b>	<b>910</b>	<b>280</b>	<b>1982</b>	<b>86</b>	<b>236</b>	<b>162</b>	<b>484</b>	<b>2466</b>

Tab. 1b. List of subjects according to types and forms of studies, specializations and specialties. Full-time undergraduate study, Specialization in Conservation of Forest Resources, Specialty „Forestry in Natural Conditions” („Lesnictwo w warunkach naturalnych”, LN) (1)

Item number	Course name	Number of hours of common content				Number of hours of Specialized material in „Forestry in natural conditions”				Total number of hours
		Lectures	Laboratory classes	Field training	Together Common content	Lectures	Laboratory classes	Field traing	Together Specialty „Forest in Natural Conditions” (LN)	Total number of hour (LN)
1	Safety and Health at Work	4			4				0	4
2	Forest Botany and Dendrology	25	40		65				0	65

3	Chemistry	10	20		30			0	30
4	Physics	10	20		30			0	30
5	Forest Surveying	15	15		30			0	30
6	Foreign language		30		30			0	30
7	Mathematics	15	15		30			0	30
8	Information Technology		30		30			0	30
9	Physical Education		30		30			0	30
10	Forest Zoology	20	19	6	45			0	45
	<b>Total semester 1</b>	<b>99</b>	<b>219</b>	<b>6</b>	<b>324</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>324</b>
11	Forest Botany and Dendrology			18	18	20	24	44	62
12	Statistics	12	20		32			0	32
13	Physiology of Woody Plants	20	30		50	10	10	20	70
14	Forest Surveying			42	42			0	42
15	Forest Soil Science and Soil Protection	30	19	6	55		21	12	33
16	Foreign language		30		30			0	30
17	Forest Climatology	12	18		30		3	12	15
18	Physical Education		30		30			0	30
	<b>Total semester 2</b>	<b>74</b>	<b>147</b>	<b>66</b>	<b>287</b>	<b>30</b>	<b>58</b>	<b>24</b>	<b>112</b>
19	Forest Mensuration and Forest Yield Science	24	16		40			0	40
20	Ecology	20	10		30			0	30
21	Forest Entomology	34	30		64			0	64
22	Foreign language		30		30			0	30
23	Forest Hydrology	20	20		40	10	10	20	60
24	Mycology and Fungi Protection	15			15		15	6	21
25	Science of Forest Mechanics	14	19	12	45			0	45
26	Forest Reclamation	9	10		19			0	19
27	Forest Site Classification	10	10		20		4	4	24

	<b>Total semester 3</b>	<b>146</b>	<b>145</b>	<b>12</b>	<b>303</b>	<b>10</b>	<b>29</b>	<b>6</b>	<b>45</b>	<b>348</b>
28	Forest Mensuration and Forest Yield Science			24	24				0	24
29	Forest Site Classification							6	6	6
30	Ecological Basics of Silviculture	22	26	8	56				0	56
31	Forest Entomology				0		10	18	28	28
32	Forest Pathology	20	21	8	49		11	16	27	76
33	Introduction to Geomatics in Forestry	20	25		45				0	45
34	Wildlife Management	18	18	6	42				0	42
35	Forest Engineering Management	14	12	12	38		8	12	20	58
36	Foreign language		30		30				0	30
37	Forest Products	24	26	18	68				0	68
	<b>Total semester 4</b>	<b>118</b>	<b>158</b>	<b>76</b>	<b>352</b>	<b>0</b>	<b>29</b>	<b>52</b>	<b>81</b>	<b>433</b>
38	Timber Harvesting in Sustainable Forestry	26	20	24	70				0	70
39	Ergonomics and Work Safety	15	15		30				0	30
40	Comprehensive Forest Protection	15	15		30	10	10		20	50
41	Ecological Monitoring				0				0	0
42	Seed and Nursery Production, Forest Genetics	30	30		60				0	60
43	Nature Protection				0	20			20	20
44	Environmental Protection	12			12		12	8	20	32
45	Silviculture	22	20		42				0	42
	<b>Total semester 5</b>	<b>120</b>	<b>100</b>	<b>24</b>	<b>244</b>	<b>30</b>	<b>22</b>	<b>8</b>	<b>60</b>	<b>304</b>
46	Comprehensive Forest Protection			12	12				0	12
47	Forest Education	8	10		18	4	2	6	12	30
48	Elective courses	30			30				0	30
49	Land Management				0	20	10		30	30
50	Computer Science in Forestry (SLIP)		40		40				0	40

51	Seed and Nursery Production, Forest Genetics			24	24				0	24
52	Silviculture	4	8	38	50	4	12	8	24	74
53	Humanities courses*	34			34				0	34
54	Forest Transportation	12	10	6	28				0	28
55	Forest Management	32	24	24	80		10	24	34	114
	<b>Total semester 6</b>	<b>120</b>	<b>92</b>	<b>104</b>	<b>316</b>	<b>28</b>	<b>34</b>	<b>38</b>	<b>100</b>	<b>416</b>
56	Biology and Protection of Waters								0	0
57	Forest Economics	20	30		50				0	50
58	Elective courses	30			30				0	30
59	Landscape Planning and Protection				0	20	20		40	40
60	Forest Politics	15			15				0	15
61	Human courses**	26			26				0	26
62	Diploma Seminar				0		30		30	30
63	Environmental Protection Law				0	15			15	15
64	Management in Forest Enterprise	16	18		34				0	34
	<b>Total semester 7</b>	<b>107</b>	<b>48</b>	<b>0</b>	<b>155</b>	<b>35</b>	<b>50</b>	<b>0</b>	<b>85</b>	<b>240</b>
	<b>Total full-time undergraduate s study, OZL (LN)</b>	<b>784</b>	<b>909</b>	<b>288</b>	<b>1981</b>	<b>133</b>	<b>222</b>	<b>128</b>	<b>483</b>	<b>2464</b>

Tab.2a. List of subjects according to types and forms of studies, and specializations. Full-time graduate study, Specialization: Forest Management (Gospodarka Leśna, GL)

Se- mestr	Course name	Number of hours				ECTS
		Lectures	Laboratory classes	Field training	Total	
1	Forest Science Methodology	14	16		30	2
	Forest Entomology - selected issues	20	10		30	3
	Phytosociology	12	6	6	24	2
	Forest Pathology - selected issues	10	20		30	3
	Forest Engineering Management	14	20		34	3
	Forest Ecosystem Protection	12	14	8	34	3
	Systems of machines utilization	10	15		25	2
	Zoology and Wildlife Management	12	12		24	2
	Forest Yield Science and Biometry	12	14	8	34	3
	Forest Resources, their Utilization and Wood Transportation	25	25		50	4
	Reclamation Designing	15	8	7	30	3
Diploma Seminar		10		10	1	
Total semester 1		156	170	29	355	31
2	Population and Biochemical					
	Genetics of Forest Trees	17	12	6	35	3
	Silviculture- selected issues	15	10	30	55	4
	Forest Ecosystem Management	20	18	12	50	4
	Applied Forest Site Classification *1	24	8	22	54	3
	Geomatics in Forestry	12	12		24	2
	Management in Forestry	16	16		32	3
	Legislation in Forestry	15			15	1
	Diploma Seminar		15		15	1
Courses to choose				105	7	
Total semester 2		119	91	70	385	28
3	Diploma Seminar		15		15	1
	Tutorial		15		15	1
	Courses to choose				105	7
	Courses to choose in foreign language				30	2
	Master Thesis					20
		0	30	0	165	31
Total full-time graduate study, GL		275	291	99	905	90

Tab.2b. List of subjects according to types and forms of studies, and specializations. Full-time graduate study, Specialization: Conservation of Forest Resources (Ochrona Zasobów Leśnych, OZL)

Se- mesrt	Course name	Number of hours				
		Lectures	Laboratory classes	Field training	Total	ECTS
1	Forest Science Methodology	14	16		30	2
	Forest Entomology - selected issues	20	10		30	3
	Forest Pathology- selected issues	10	21		31	3
	Phytosociology	16	10	6	32	3
	Forest Engineering Management	14	22		36	3
	Mechanization in Forestry	10	10		20	2
	Forest Ecosystem Protection	12	14	8	34	3
	Zoology and Wildlife Management	15	16		31	2
	Forest Yield Science and Biometry	12	12	6	30	3
	Forest Resources, their Utilization and Wood Transportation	20	20		40	3
	Reclamation Designing	15	8	8	31	3
	Diploma Seminar		10		10	1
Total semester 1		158	169	28	355	31
2	Protection of Forest Genetic Resources	18	10	8	36	3
	Silviculture in Special Places	8	8	24	40	4
	Forest Ecosystem Management	18	15	12	45	4
	Forest Site Classification of Natural and Distorted Forests * <sup>1</sup>	24	8	22	54	3
	Geomatics in Forestry	14	14		28	2
	Forest Products Marketing and Management in Forestry	16	16		32	2
	Legislation in Forestry	15			15	1
	Nature Protection	15			15	1
	Diploma Seminar		15		15	1
	Courses to choose				105	7
Total semester 2		128	86	66	385	28
3	Diploma Seminar	15		15	1	
	Tutorial		15		15	1
	Courses to choose				105	7
	Courses to choose in foreign language				30	2
	Master Thesis					20
Total semester 3		0	30	0	165	31
Total full-time graduate study, OZL		286	285	94	905	90

\* in this 10h Climatology (4h lecture, 6h field training)

Tab. 3a. List of „elective subjects” and „subject to choose” in current academic year, i.e. in 2011/2012, for full-time undergraduate study Program (in Polish)

Item	Name
1	Philosophy of environment
2	History of philosophy
3	Elements of psychology and social communication
4	Social communications with elements of management
5	History of Polish art and culture
6	Principles of conducting modern forest management
7	Principles of the forest certification in Poland
8	Forest and building property valuation
9	Biodiversity and „Nature 2000” network
10	Selected technologies in forest training
11	The classification and trading in forest multiply material
12	Population genetics of forest trees
13	Valuation of forests and tree areas
14	Marketing in forest technique
15	Statistic analysis of data in environmental sciences
16	Applied meteorology
17	Basics of wood conservation
18	Methods of restitution of animals
19	Hunting cynology
20	Valuation and assessment of hunting trophies
21	Pileate mushrooms appearing in sylvan and forest settlements
22	The role of dying trees and dead trees in the forest ecosystem
23	Ornithology
24	Enzymology of the soil
25	Vademecum of soil science and geology
26	Geography of forests in Poland
27	Biogeochemistry of coal in forest ecosystems
28	Die Bodenkunde und ihre geologischen Grundlagen
29	Devising GPS techniques
30	Geomatics - creation and presentation of maps
31	Application of geodata in graduation works
32	Recycling
33	Machines for conservation of green areas
34	Unconventional sources of energy and their application
35	Surgery and tree nursing
36	Phytosociological bases of diagnosing forest sites
37	Computer assisted designing of engineering objects in forests
38	Phytopathology diagnostics - chosen issues
39	Key issues of forests utilization in the World
40	How to prepare the thesis?
41	National parks of Europe
42	The soil and landscapes and the natural environment of Europe
43	Hunting

Tab. 3b. List of „elective subjects” and „subject to choose” in current academic year, i.e. in 2011/2012, for part-time-time undergraduate study Program in Polish (but some subjects are offered in English)

Item	Name
1	Principles of conducting modern forest management
2	Principles of the forest certification in Poland
3	Forest and building property valuation
4	Biodiversity and „Nature 2000” network
5	The classification and trading in forest multiply material
6	Selection of trees in forest practice
7	Selected technologies in forest training
8	Valuation of forests and tree areas
9	Enzymology of the soil
10	Marketing in forest technique
11	Hunting
12	Valuation and assessment of hunting trophies
13	Methods of displacing and the reconstitution of animals
14	Hunting cynology
15	Recycling
16	Machines for conservation of green areas
17	Surgery and tree nursing
18	Key issues of forests utilization in the World



Tab. 3c. List of „elective subjects” and „subject to choose” in current academic year, i.e. in 2011/2012, for full-time and part-time graduate study Programs (in Polish, but some subjects are offered in English)

Item	Name
1	Antropo-pressure in forest
2	Ecology of tree population
3	Natural disturbances in forest communities
4	Ecology and problems of contemporary forestry
5	Remediation of contaminated areas
6	The outline of applied silviculture in North America
7	Socio-Economic Challenges in European Forestry
8	Forests and World's Energy Problems
9	Principles of conducting modern forest management
10	Principles of the forest certification in Poland
11	Valuation of forest and investment properties
12	Invasive species in forests
13	Monitoring and conservation of forest biodiversity
14	Invasion ecology; impacts of invasive species and their control in forests
15	Selection of trees
16	Biotechnology of forest trees
17	Seed economy
18	Planting forestry - chosen issues
19	Enzymology of the soil
20	Vademecum of Soil Science and Geology
21	Instrumental methods of the quality assessment of the soil, water and plants
22	Forest as the source of raw materials and of inspiration in the craft and the art
23	Dendrochronology and dendroclimatology
24	Basics of molecular biology and biotechnology of an arborescent plants
25	Statistical modeling in environmental research
26	Renewable energy in forestry
27	Airborne and satellite remote sensing
28	Airborne and Terrestrial Laser Scanning
29	Fauna protection
30	English language in ecology and nature conservation

Tab. 4. Share of particular form and teaching content in full-time undergraduate (I cycle) study program and Specializations: Forest Management (GL) and Specialty „Multiple-function Forestry” (LW) as well as a number of teaching hours depending on category of training

Teaching content		Number of hours		Percentage (%)	
Basic courses		331		14	
Main courses		1726		70	
Courses to choose (or elective courses)		60		2	
Other		349		14	
Total		2466		100	
Number of hours					
Lectures	Laboratory classes	Field training	Seminars	Other	
878	1116	442	30		2466
Percentage (%) in total number of hours					Total
36	45	18	1		100

Tab. 5. Share of particular form and teaching content in full-time undergraduate (I cycle) study and Specialization: Forest Management (GL) and Specialty „Technique and Execution of Forest Works” (TWL) as well as a number of teaching hours depending on category of training

Teaching content		Number of hours		Percentage (%)	
Basic courses		331		14	
Main courses		1741		71	
Courses to choose (or elective courses)		60		2	
Other		334		14	
Total		2466		100	
Number of hours					
Lectures	Laboratory classes	Field training	Seminars	Other	
863		1145	428	30	2466
Percentage (%) in total number of hours					Total
35	47	17	1		100

Tab.6. Share of particular form and teaching content in full-time undergraduate (I cycle) study and Specialization: Forest Resources Conservation (OZL) and Specialty „Forestry in Natural Conditions” (LN) as well as a number of teaching hours depending on category of training

Teaching content		Number of hours	Percentage (%)		
Basic courses		394	16		
Main courses		1574	64		
Courses to choose (or elective courses)		60	2		
Other		436	18		
Total		2464	100		
Number of hours					
Lectures	Laboratory classes	Field training	Seminars	Other	
917	1101	416	30		2464
Percentage (%) in total number of hours					Total
37	45	17	1		100

Tab.7. Share of particular form and teaching content in full-time undergraduate (I cycle) study and Specialization: Forest Resources Conservation (OZL) and Specialty „Forestry in Industrial Regions” (LP) as well as a number of teaching hours depending on category of training

Teaching content		Number of hours	Percentage (%)		
Basic courses		370	15		
Main courses		1645	67		
Courses to choose (or elective courses)		60	2		
Other	389	16			
Total	2464	100			
Number of hours					
Lectures	Laboratory classes	Field training	Seminars	Other	
911	1093	430	30		2464
Percentage (%) in total number of hours					Total
37	44	18	1		100

Tab.8. Share of particular form and teaching content in full-time graduate (II cycle) study and Specialization: Forest Management (GL)

Teaching content		Number of hours		Percentage (%)	
Basic courses		30		3	
Main courses		541		60	
Courses to choose (or elective courses)		240		27	
Other		94		10	
Total		905		100	
Number of hours					
Lectures	Laboratory classes	Field training	Seminars	Other	
275	236	99	55	240	905
Percentage (%) in total number of hours					Total
30	26	11	6	27	100

Item „other” - includes „Courses to choose”

Tab.9. Share of particular form and teaching content in full-time undergraduate (I cycle) study and Specialization: Forest Resources Conservation (OZL)

Basic courses		Number of hours		Percentage (%)	
Main courses		30		3	
Courses to choose (or elective courses)		534		59	
Other		240		27	
Total		101		11	
Basic courses		905		100	
Number of hours					
Lectures	Laboratory classes	Field training	Seminars	Other	
286	230	94	55	240	905
Percentage (%) in total number of hours					Total
32	25	10	6	27	100

Item „other” - includes „Courses to choose”

Tab.10. Share of particular form and teaching content in part-time undergraduate (I cycle) study and Specializations: Forest Management (GL) and „Multiple-function Forestry” Specialty (LW) as well as a number of teaching hours depending on category of training

Teaching content		Number of hours	Percentage (%)		
Basic courses		245	17		
Main courses		891	61		
Courses to choose (or elective courses)		60	4		
Other		264	18		
Total		1460	100		
Number of hours					
Lectures	Laboratory classes	Field training	Seminars	Other	
560	652	218	30		1460
Percentage (%) in total number of hours					Total
38	45	15	2		100

Tab.11. Share of particular form and teaching content in part-time undergraduate (I cycle) study and Specialization: Forest Management (GL) and „Technique and Execution of Forest Works” Specialty (TWL) as well as a number of teaching hours depending on category of training

Teaching content		Number of hours	Percentage (%)		
Basic courses		245	17		
Main courses		891	61		
Courses to choose (or elective courses)		60	4		
Other		264	18		
Total		1460	100		
Number of hours					
Lectures	Laboratory classes	Field training	Seminars	Other	
552	670	208	30		1460
Percentage (%) in total number of hours					Total
38	46	14	2		100

Tab.12. Share of particular form and teaching content in part-time graduate (II cycle) study and Specialization: Forest Management (GL)

Teaching content		Number of hours		Percentage (%)	
Basic courses		30		5	
Main courses		320		59	
Courses to choose (or elective courses)		140		26	
Other		56		10	
Total		546		100	
Number of hours					
Lectures	Laboratory classes	Field training	Seminars	Other	
162	145	66	33	140	546
Percentage (%) in total number of hours					Total
30	27	12	6	26	100

Item „other” - includes „Courses to choose”

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