

**CABINET OF MINISTERS OF UKRAINE
NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE**

**CURRICULUM
for specialist training in 2013**

| | |
|----------------------------|---|
| Degree | “Master of Science” |
| Branch of knowledge | 0505 “Mechanical engineering and processing of materials” |
| Specialty | 8.05050303 “Forest complex equipment” |
| Specialization | production oriented master program |
| Master program | “Constructing machines, designing and testing of techniques for forest complex” |
| Specialization | research oriented master program |
| Master program | “Mechatronic Systems of Machines for forestry” |
| Form of training | full-time |
| Term of study | 1,5 years |
| Qualification of graduates | M.Sc. Mechanical engineering |

Implement Master's programmes

| | |
|----------------------------------|---|
| Education and research institute | Technical |
| Faculty | Engineering and Design of Machinery and Systems of Environmental Management |

II. CURRICULUM

| № | Name of educational discipline | Amount | | Form of control | | | Auditorium classes, hours | | | Self study | Practical training | | Division of the week hours per years of study and per semesters | | | |
|--|--|------------|-------------|-----------------|----------|----------------|---------------------------|-----------|-----------------|------------|--------------------|-----------------------------|---|-----------|-------------------------------|-----------|
| | | hours | credits | Examination | Credits | Course project | total | include | | | Practical training | Research practical training | 1 st year of study | | 2 st year of study | |
| | | | | | | | | lecture | Laboratory work | | | | Practical classes | 1 | 2 | 3 |
| | | | | | | | | | | | | | | semester | semester | semester |
| Number of weeks per semester | | | 17 | 17 | 10 | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 1. REGULATORY ACADEMIC DISCIPLINES | | | | | | | | | | | | | | | | |
| 1.1. Cycle of humanitarian and socio-economic training* | | | | | | | | | | | | | | | | |
| 1 | Philosophy of science | 54 | 1,5 | exam | | | 34 | 17 | | 17 | 20 | | | 2 | | |
| 2 | Foreign language for business | 36 | 1 | | cr. | | 17 | 17 | | | 19 | | | 1 | | |
| Sum per cycle | | 90 | 2,5 | 1 | 1 | 0 | 51 | 34 | 0 | 17 | 39 | 0 | 0 | 3 | 0 | 0 |
| 1.2. Cycle of naturally (fundamental) training* | | | | | | | | | | | | | | | | |
| 1 | Automation of technical systems of machines for forestry | 108 | 3 | | cr. | | 34 | 17 | 17 | | 74 | | | 2 | | |
| 2 | Applied computer technologies of machines for forestry | 108 | 3 | | cr. | | 51 | 17 | 34 | | 57 | | | | 2 | |
| 3 | Measuring devices and methods of measurement | 126 | 3,5 | | cr. | | 20 | 10 | 10 | | 106 | | | | | 2 |
| 4 | Reliability of machines for forestry | 108 | 3 | | cr. | | 34 | 17 | 17 | | 74 | | | 2 | | |
| 5 | Labour protection in forest complex | 36 | 1 | exam | | | 17 | 17 | | | 19 | | | | 1 | |
| Sum per cycle | | 486 | 13,5 | 1 | 4 | 0 | 156 | 78 | 78 | 0 | 330 | 0 | 0 | 4 | 3 | 2 |
| 1.3. Cycle of professional and practical training* | | | | | | | | | | | | | | | | |
| 1 | Computer design of equipment for forestry | 180 | 5 | exam | cr. | 36 | 68 | 34 | 34 | | 76 | | | 2 | 2 | |
| 2 | Theory and designing of machines for forestry | 144 | 4 | exam | | | 68 | 34 | 34 | | 76 | | | 4 | | |
| 3 | Mechatronic systems of machines for forestry | 108 | 3 | | cr. | | 34 | 17 | 17 | | 74 | | | | 2 | |
| 4 | Theory of the technical systems | 108 | 3 | | cr. | | 20 | 10 | 10 | | 88 | | | | | 2 |
| Sum per cycle | | 540 | 15 | 2 | 3 | 36 | 190 | 95 | 95 | 0 | 314 | 0 | 0 | 6 | 4 | 2 |
| 2. ELECTIVE ACADEMIC DISCIPLINES | | | | | | | | | | | | | | | | |
| 2.1. Disciplines chosen by University | | | | | | | | | | | | | | | | |
| 2.1.1. Cycle naturally scientific (fundamental) training* | | | | | | | | | | | | | | | | |
| 1 | Foreign language | 54 | 1,5 | exam | | | 34 | | | 34 | 20 | | | 2 | | |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|--|------------|-----------|----------|----------|-----------|------------|-----------|-----------|-----------|------------|----------|----------|----------|----------|----------|
| 2 | Engineering to using of life resources | 108 | 3 | | cr. | | 34 | 17 | 17 | | 74 | | | | 2 | |
| 3 | Patenting and copyrights | 72 | 2 | | cr. | | 17 | 17 | | | 55 | | | 1 | | |
| 4 | International standardization and certification to technologies, raw-materials, and end products | 54 | 1,5 | | cr. | | 17 | 17 | | | 37 | | | 1 | | |
| 5 | History of techniques | 36 | 1 | | cr. | | 17 | 17 | | | 19 | | | 1 | | |
| Sum per cycle | | 324 | 9 | 1 | 4 | 0 | 119 | 68 | 17 | 34 | 205 | 0 | 0 | 5 | 2 | 0 |
| Production oriented disciplines | | | | | | | | | | | | | | | | |
| Master's program "Constructing machines, designing and testing of techniques for forest complex" | | | | | | | | | | | | | | | | |
| 1 | Testing of machines for forestry | 108 | 3 | exam | | | 20 | 10 | 10 | | 88 | | | | | 2 |
| 2 | Theory and designing of vehicles for forestry | 108 | 3 | | cr. | | 20 | 10 | 10 | | 88 | | | | | 2 |
| 3 | Dynamics of machines for forestry | 144 | 4 | exam | | 36 | 20 | 10 | 10 | | 88 | | | | | 2 |
| 4 | Designing of machines for forestry | 108 | 3 | exam | | | 34 | 17 | 17 | | 74 | | | | 2 | |
| 5 | Designing of wood processing equipment | 108 | 3 | exam | | | 51 | 17 | 34 | | 57 | | | | 3 | |
| Sum per cycle | | 576 | 16 | 4 | 1 | 36 | 145 | 64 | 81 | 0 | 395 | 0 | 0 | 0 | 5 | 6 |
| Research oriented disciplines | | | | | | | | | | | | | | | | |
| Master's program "Mechatronic Systems of Machines for forestry" | | | | | | | | | | | | | | | | |
| 1 | Testing and certification of machines for forestry | 108 | 3 | exam | | | 20 | 10 | 10 | | 88 | | | | | 2 |
| 2 | Experimental methods of researchers to machines for forestry | 108 | 3 | | cr. | | 20 | 10 | 10 | | 88 | | | | | 2 |
| 3 | Dynamics of technical systems | 108 | 3 | exam | | 36 | 20 | 10 | 10 | | 52 | | | | | 2 |
| 4 | Optimization of technical systems for forestry | 72 | 2 | exam | | | 34 | 17 | 17 | | 38 | | | | 2 | |
| 5 | Reliability of technical systems for forestry | 108 | 3 | exam | | 36 | 34 | 17 | 17 | | 38 | | | | 2 | |
| 6 | Optimization of designs for woodworking equipment | 108 | 3 | exam | | | 34 | 17 | 17 | | 74 | | | | 2 | |
| Sum per cycle | | 612 | 17 | 5 | 1 | 72 | 162 | 81 | 81 | 0 | 378 | 0 | 0 | 0 | 6 | 6 |
| 2.2. Disciplines chosen by students | | | | | | | | | | | | | | | | |
| 2.2.1. Cycle professional disciplines and practical training* | | | | | | | | | | | | | | | | |
| 1 | Theory of mechatronic systems of machines for forestry | 108 | 3 | | cr. | | 34 | 17 | 17 | | 74 | | | | 2 | |
| 2 | Nanotechnology | 108 | 3 | | cr. | | 34 | 17 | 17 | | 74 | | | | 2 | |
| Sum per cycle | | 216 | 6 | | 1 | 0 | 68 | 34 | 34 | 0 | 148 | 0 | 0 | 0 | 4 | 0 |
| Production oriented disciplines | | | | | | | | | | | | | | | | |
| Master's program "Constructing machines, designing and testing of techniques for forest complex" | | | | | | | | | | | | | | | | |
| 1 | Mechanics of materials and timbers | 108 | 3 | | cr. | | 20 | 10 | 10 | | 88 | | | | | 2 |
| 2 | Methods of designing machines for forestry | 108 | 3 | exam | | | 20 | 10 | 10 | | 88 | | | | | 2 |
| 3 | Design of vibration machines for forestry | 144 | 4 | exam | | | 20 | 10 | 10 | | 124 | | | | | 2 |
| 4 | Designing of technical systems for forestry | 108 | 3 | | cr. | | 20 | 10 | 10 | | 88 | | | | | 2 |
| Sum per cycle | | 468 | 13 | 2 | 2 | 0 | 80 | 40 | 40 | 0 | 388 | 0 | 0 | 0 | 0 | 8 |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|--|--|-------------|-----------|-----------|-----------|-----------|------------|------------|------------|-----------|-------------|------------|------------|-----------|-----------|-----------|
| Research oriented disciplines | | | | | | | | | | | | | | | | |
| Master's program "Mechatronic Systems of Machines for forestry" | | | | | | | | | | | | | | | | |
| 1 | Mathematical modeling of technical systems for forestry | 108 | 3 | | cr. | | 20 | 10 | 10 | | 88 | | | | | 2 |
| 2 | Newest design methods of machines for forestry | 108 | 3 | exam | | | 20 | 10 | 10 | | 88 | | | | | 2 |
| 3 | Vibration processes in machines for forestry | 108 | 3 | exam | | | 20 | 10 | 10 | | 88 | | | | | 2 |
| 4 | Mechanics of contact interaction of machines with timber | 108 | 3 | | cr. | | 20 | 10 | 10 | | 88 | | | | | 2 |
| Sum per cycle | | 432 | 12 | 2 | 2 | 0 | 80 | 40 | 40 | 0 | 352 | 0 | 0 | 0 | 0 | 8 |
| Sum per selected components | | 2700 | 75 | 11 | 16 | 72 | 809 | 413 | 345 | 51 | 1819 | 0 | 0 | 18 | 18 | 18 |
| Practical trainings | | 360 | 10 | | | | | | | | | 216 | 144 | | | |
| Preparing and defense Master's thesis | | 180 | 5 | | | | | | | | | | | | | |
| Number of course projects | | | | | | 3 | | | | | | | | | | |
| Number of credits | | | | | 16 | | | | | | | | | | | |
| Number of examinations | | | | 11 | | | | | | | | | | | | |
| Sum per program | | 3240 | 90 | 11 | 16 | 72 | 809 | 413 | 345 | 51 | 1819 | 216 | 144 | 18 | 18 | 18 |

* Names of disciplines cycles in accordance with the requirements of higher education industry standards, ratified after 2007 year, EQH and EPP.

III. DEGREE REQUIREMENTS

| Disciplinary areas | Hours | Credits | % |
|---|-------------|-----------|------------|
| 1. Regulatory academic disciplines | | | |
| 1.1. Cycle of humanitarian and socio-economic training* | 90 | 2,5 | 2,8 |
| 1.2. Cycle of naturally (fundamental) training* | 486 | 13,5 | 15 |
| 1.3. Cycle of professional and practical training* | 540 | 15 | 16,7 |
| 2. Elective academic disciplines | | | |
| 2.1. Disciplines chosen by University | | | |
| 2.1.1. Cycle naturally scientific (fundamental) training* | | | |
| Production oriented disciplines | 900 | 25 | 27,7 |
| Research oriented disciplines | 936 | 26 | 28,8 |
| 2.2. Disciplines chosen by students | | | |
| 2.2.1. Cycle professional disciplines and practical training* | | | |
| Production oriented disciplines | 684 | 19 | 21,1 |
| Research oriented disciplines | 648 | 18 | 20 |
| 3. Other | 540 | 15 | 16,7 |
| Sum per program | 3240 | 90 | 100 |

* Names of disciplines cycles in accordance with the requirements of higher education industry standards, ratified after 2007 year, EQH and EPP

IV. TIME SCHEDULE, WEEKS

| Year of study | Auditorium classes | Exams | Practical training | Preparation of Master Theses | State certification | Breaks | Sum |
|------------------------|--------------------|----------|--------------------|------------------------------|---------------------|----------|-----------|
| 1 | 34 | 4 | 10 | - | - | 8 | 56 |
| 2 | 10 | 2 | - | 4 | 1 | - | 17 |
| Sum per program | 44 | 6 | 10 | 4 | 1 | 8 | 73 |

V. PRACTICAL TRAINING

| № | Practical training | Semester | Hours | Credits | Number of weeks |
|---|--|----------|-------|---------|-----------------|
| 1 | Design oriented practical training | 1 | 144 | 4 | 4 |
| 2 | Production oriented practical training | 2 | 216 | 6 | 6 |

VI. COURSE WORK AND PROJECT

| № | Name of educational discipline | Hours | Credits | Course work | Course project |
|---|---|-------|---------|-------------|----------------|
| 1 | Reliability of technical systems for forestry | 36 | 1 | - | 1 |
| 2 | Computer design of equipment for forestry | 36 | 1 | - | 1 |
| 3 | Dynamics of machines for forestry | 36 | 1 | - | 1 |

VII. STATE CERTIFICATION

| № | State certification | Hours | Credits | Number of weeks |
|---|--|-------|---------|-----------------|
| 1 | Preparation and defence of Master Theses | 180 | 5 | 5 |

