SYLLABUS

1. Course title:

NATURAL POLYMERS

2. Code:

3. Cycle of study:

1

4. ECTS credits:

3

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

7. Class restrictions:

8. Duration / semester:

1 4

9. Weekly contact hours:

9.1. Lectures:	2
9.2. Seminars:	0
9.3. Laboratory/Practice classes:	0

10. Faculty:

Faculty of Technology

11. Department/study program:

Chemical Engineering and Technologies

12. Lecturer:

Dr.sc. Jasmin Suljagić, Assistant professor

13. Lecturer's e-mail:

jasmin.suljagic @untz.ba

14. Web site:

www.tf.untz.ba

15. Course aims:

The aim of this course is to acquire basic theoretical and practical knowledge of the origin and properties of natural polymer materials and their application.

16. Learning outcomes:

After successfully mastering the course students will be able to:
- specify natural polymers and their origin
- structure and properties of natural polymer materials
- areas of use of natural polymer materials
- distinguish natural fibers based on burning characteristics.

17. Course content:

- Overview of basic terms on polymers and polymer materials.
- Division of natural polymer materials. PLA and PHB: synthesis and properties. Molecular and supermolecular structure of natural polymers.
- String: Structure and Properties. Modification and application of starch.
- Structure and properties of cellulose. Microcrystalline cellulose. Natural cellulose fibers.
- Regenerated cellulose. Cellulose derivatives. Alginic acid and alginates. Properties and application of alginates. Ion exchange.
- Lignin structure, properties, application.
- Protein fibers. Structure and properties of silk. Wool. Structure and properties.
- Structure and properties of collagen. Colloidal Materials.
- Casein. Structure, phase separation, application. Natural fiber features.
- A natural rubber. Natural Rubber Derivatives. Mastication and rubber vulcanization.
- Rubber design and rubber production. Tire wear. Manual regeneration.
- Natural resin.

18. Learning methods:

The most important learning methods in the subject are:
- lectures with the use of multimedia resources, active learning techniques and with active participation and discussion of students;
- practical exercises and active experimentation;
- solving problem tasks.

19. Assessment methods:

Activity - for activity in lectures and exercises students can obtain 0-5 points.
Colloquium: colloquium of experimental work which consists of a theoretical basis and conducted experimental exercises. For the colloquium student can obtain a maximum of 15 points, the minimum number of points that a student must achieve is 5.
Colloquium and completion of the experimental work is a prerequisite for obtaining a signature.
Written assessment during the semester (Test I and II) - Test I and Test II include problem-solving tasks. The maximum number of points on each test is 15th
Final exam - assessment implies the unification of the entire matter handled.
In order to pass the courses, student must achieve a minimum of 51 points, of which a minimum of 25 points on the final exam.

20. Assessment components:

Rating exam is based on the total number of points a student has obtained by completing pre-exam requirements and exams, according to the quality of the acquired knowledge and skillsand contains a maximum of 100 points. It is determined according to the following scale:

Obligations	Points
Presence in classes	0-5
Experimental work	5-15
Test I	0-15
Test II	0-15
Final Exam	25-50

21. Required reading list:

1. B. Andričić, Prirodni polimerni materijali, Priručnik, Sveučilište u Splitu, Split, 2008.
2. C. E. Carracher, Seymour/Carraher's Polymer Chemistry, 4th Ed., Marcel Dekker, New York, 1996.

22. Web sources:

23. Applicable starting from the academic year:

2015/2016

24. Adopted in the Faculty/Academy session: