|  |  |
| --- | --- |
| Course: | Hybrid drying techniques |
| Course id: ЗМПТ1И15 |
| Number of ECTS: 5 |
| Teacher: | Ivan Pavkov, PhD, Assistant professor |
| Course status | Elective |
| Number of active teaching classes (weekly) |
| Lectures: 2 | Practical classes: 2 | Other teaching types: - | Study research work: - | Other classes: - |
| Precondition courses | None/navesti ako ima |
| 1. Educational goal

Drying is operation found in almost all industrial sectors, ranging from agriculture to pharmaceuticals. It is the oldest, most diverse and most energy intensive operation. Hybrid drying technology is combination of two or more drying techniques. This combination in not only the removal of liquid from biomaterials, but also with the extent to which the dried product meets the necessary quality criteria. This criterion is upon the knowledge of hybrid drying process and technical equipment which are on disposal. |
| 1. Educational outcomes

On successful completion of this subject, the students should: a) to assemble mastery of the knowledge, techniques, skills and tools related to hybrid drying techniques, b) be able to identify, analyze and solve drying facilities problems, c) the knowledge gather in this subject will provoke creativity in design and management of drying biomaterial systems. |
| 1. Course content

Lectures:Theoretical basis of drying process: convective drying, conductive drying, osmotic drying, vacuum drying, lyophilization. Influence of the studied drying processes on changes of properties biomaterials depending of process parameters. Hybrid techniques as combination different drying processes. Technical and technological solutions of equipment for hybrid drying techniques. Practice:Practice work is going in laboratory on conducting of experiments for the hybrid drying techniques biomaterials, data processing, making of term paper from processed dates. Calculation exercises: Calculations of thermal and material bilans for hybrid drying tehniques. |
| 1. Teaching methods

Lectures – oral presentations with power point softer, Practical classes- calculations and practical work in laboratory, Consultations and Term paper |
| Knowledge evaluation (maximum 100 points) |
| Pre-examination obligations | Mandatory | Points | Final exam (izabrati) | Mandatory | Points |
| Lecture attendance | Yes | - | *Oral part of the exam* | Yes | 40 |
| Test | No | - |  |
| Exercise attendance | Yes | - |
| Term paper | Yes | 60 |
| Literature  |
| Ord. | Author | Title | Publisher | Year |
|  | Tadeusz Kudra, Arun S. Mujumdar | Advanced Drying Technologies, Secound Edition | CRC Press, SAD | 2009 |
|  | Babić, Ljijana, Babić, Mirko | Draying and Storage (on Serbian language) | Agriculture faulty, Novi Sad, Serbia | 2012 |

|  |  |  |
| --- | --- | --- |
| Znak univerziteta | UNIVERSITY OF NOVI SADFACULTY OF AGRICULTURE 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 8 | Znak fakulteta2 |
| Study Programme AccreditationMASTER ACADEMIC STUDIES *AGRICULTURAL ENGINEERING* |
| Table 5.2 Course specification |