

# organisms

# Life sciences

examir

# BIOLOGY



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**BIOLOGY**  
**Overview lectures**

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## INTRODUCTION

Overview lectures on biology for foreigners in English is made on the basis of a number of modern foreign schoolbook and manuals: Biggs A. et al, 2008; Peter J. Russell et al, 2011; Michael D. Johnson, 2012; Michael D. Johnson, 2011; Sylvia S. Mader, 2010; David Krogh, 2011; David Sadava et al, 2011; Marielle Hoefnagels, 2012; Robert J. Brooker et al, 2010 and etc. Overview lectures contain the main sections of biology: The chemistry of life, The Cell, Metabolism and the conversion of energy in the organism, Genetics, Animals, Anatomy and physiology of humans and etc.), which are necessary for development theoretical and practical material on the biology, as well as contribute to the preparation of students for the interview for admission to medical, biological and ecological universities. In addition to the lecture material, overview lectures contain practical part, which allows students to carry out self-knowledge.

РЕПОЗИТОРИЙ БГПУ

## Literature

1. Biggs A. et al. Glencoe Biology, Student Edition – 2008 – 1204p.
2. Peter J. Russell et al. Biology. The Dynamic Science (2nd ed.) – 2011 – 1283p.
3. Michael D. Johnson. Human Biology. Concepts and Current Issues (6th ed.) – 2012 – 560p.
4. Peter H. Raven et al. Biology (9th ed.) – 2011 – 1279p.
5. Sylvia S. Mader. Biology (10th ed.) – 2010 – 907p.
6. David Krogh. Biology. A Guide to the Natural World (5th ed.) – 2011 – 725p.
7. David Sadava et al. Life. The Science of Biology (9th ed.) – 2011 – 1266p.
8. Marielle Hoefnagels. Biology. Concepts and Investigations (2nd ed.) – 2012 – 820p.
9. Robert J. Brooker et al. Biology (2nd ed.) – 2010 – 1282p.
10. O-Y. L. Bekish. Medical Biology – 2005.
11. [www.biology-questions-and-answers.com](http://www.biology-questions-and-answers.com)

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