**BIOCHEMISTRY BBI1108**

**TOPICS and REQUIREMENTS**

***Lectures***

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| **Week** | **Topic** | **Remarks** |
| **1** | Introduction: Basic facts and laws for students studying biochemistry |  |
| **2** | Biomolecules I: amino acids, peptides, proteins |  |
| **3** | Biomolecules II: nucleotides, nucleic acids |  |
| **4** | Biomolecules III: carbohydrates |  |
| **5** | Biomolecules IV: lipids |  |
| **6** | Enzymes I |  |
| **7** | Enzymes II |  |
| **8** | Carbohydrate metabolism: glycolysis, citric acid cycle |  |
| **9** | Electron transport chain, oxidative phosphorylation |  |
| **10** | Carbohydrate metabolism: gluconeogenesis, glycogen metabolism, pentose phosphate pathway |  |
| **11** | Lipid metabolism |  |
| **12** | Metabolism of nitrogen-containing biomolecules |  |
| **13** | Replication, transcription |  |
| **14** | RNA processing, translation |  |

***Practical course***

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| **Week** | **Topic** | **Remarks** |
| **1-2** | General laboratory, occupational safety and fire regulations. Laboratory schedule. Calculating the concentration of solutions |  |
| **3-4** | Qualitative color reactions of proteins: Biuret reaction, xanthoprotein reaction. Salting out proteins. Precipitation of proteins with alcohol and heavy metal salts. Purification of proteins by dialysis. |  |
| **5-6** | Common reactions of aldoses and ketoses, qualitative sugar detections. Fehling test, Tollens reaction. Invert sugar. Detection of starch with iodine |  |
| **7-8** | Quantitative determination of vitamin C. |  |
| **9-10** | Hydrolysis of starch. Determination of alpha-amylase activity |  |
| **11-12** | Dissolving lipids. Saponification. Cholesterol detection: Salkowski's test. |  |
| **13-14** | Closing exercise. Evaluation of the semester's work. |  |

**Requirements:**

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| Participation in classes: | Attending the lectures is recommended.  Participation in the practical course is mandatory. |
| Inspections during the semester: | Regular mid-term tests in practical course |
| Credit assigned to the subject: | 4 |
| Method of determining the grade: | Accomplishment of the practical course is a precondition to taking an exam. The exam consists of a written and an oral part.  Evaluation of the performance:  0-49 %: fail  50-59 %: pass  60-79 % satisfactory  80-89 %: good  90-100 %: excellent |
| Recommended readings: | Students receive the ppt presentations of the lectures (in pdf format) at the beginning of the course, and descriptions to the practical work every week.  Stryer, L. (2002) Biochemistry. W H Freeman, New York, ISBN-10: 0-7167-3051-0 |
| Recommended homepages: |  |