European Chemistry Thematic Network Association

Site Visit Report

For the application for the

CHEMISTRY EUROBACHELOR® LABEL

Samara State Technical University

for the study programme

Bachelor of Chemical technology

"Chemistry and technology of natural energy carriers and carbon materials" profile
"Chemical technology of organic substances" profile
"Chemical technology of high-molecular compounds" profile

The meeting started at the Faculty of Chemistry, Samara State Technical University, Samara, 12.04.2021 at 9h00 in room 202 (offline-online).

The site visit was carried out partly online on the ZOOM platform. The review was organized jointly with the Russian accreditation agency AKKORK, the Russian members of the reviewers' team were directly at the university.

Composition and Affiliation of the Site Visit Team

Pavel Drašar
Prof. Dr., UCT Prague, Vice President of ECTN, Scientific Secretary of the Czech Association of Scientific and Technical Societies (ECTN expert).

Soloviev Mikhail Yurievich
Ph.D. (Chemistry), Vice-Rector for Academic Affairs of the Yaroslavl State Pedagogical University named after K. D. Ushinsky (representative of the academic community).

Bermeshev Maxim Vladimirovich
Doctor of Chemical Sciences, Deputy Director of the Institute of Petrochemical Synthesis named after A. V. Topchiev of the Russian Academy of Sciences (representative of the employers' community).

Oleg Korovin
4th year student of the Bachelor's programme "Energy and resource saving processes in Chemical technology, Petrochemistry and Biotechnology" of the RUDN University of Russia (expert from the student community).

Background of the visit

History of the Uniersity

Samara State Technical University has existed for over 100 years. It was founded in 1914. During its existence, the university has changed several names. At the beginning it was called Samara Polytechnic Institute. In 1934, several educational institutions were merged. As a result, the Middle Volga Industrial Institute was formed. The next important event in the history of the university took place in 1935. The educational institution was given a new name – Kuibyshev Industrial Institute named after Valerian Vladimirovich Kuibyshev. It was reorganised in 1962. Realisation of educational activities were continued by Kuibyshev Polytechnic Institute (KPtI). In 1991, the university repeatedly changed its name. KPtI was renamed to Samara Polytechnic Institute. A year later, the educational institution received the status of Samara State Technical University. SamSTU continues its work to this day. In 2014, it was included in the list of the best universities of the CIS.

History of the Faculty of chemical technology goes back to 1935 when three previously independent technical colleges became a single Mid-Volga industrial institute. In the Mid-Volga Industrial Institute joined the Faculty of Chemistry as the Faculty of Chemical Technology. University itself was established in 1914, now there is over 3500 staff and almost 20k students.

University does not hold any EuroLabel.

University has good scientific position, yearly there is in average over 100 publications databased in the Web of Science (with growing tendency), some of them in journals with highest profile and in domestic and foreign collaboration; most of them in the field of technology

There was very precisely prepared self-assessment report. Study programmes (1st cycle) are containing all required chemical disciplines. There has to be appreciated the enthusiasm of the University administration and teaching staff in reaching the best status and quality of education. Students well prepared in individual technical and chemical disciplines. There should be appreciated the good proficiency of students we met in English language, good ability of the students we met to communicate, esp. the 1st cycle (BSc study) group and good and vital contact with the graduates from the past on important positions in industry.

On the other hand, the team found that students, despite the good knowledge in the disciplines, are not able to apply the knowledge in broad scope of chemical disciplines and generally natural sciences or general life, students had problems in understanding safety. Seemingly, students do not have enough practical (hands-on) training and experience, possibly even in temporal (sandwich) industry placements. Students shall improve their ability to work with information.

University seemingly uses “credits” simply recalculated from contact hours not as real workload measure (ECTS credits) where students shall have their influence on their value, based on their educational experience.

Statistical data

17 018 students study at the university, including

- 12 368 people in bachelor’s programmes;
- 2 207 people in specialist’s programmes;
- 2 067 people in master’s programmes;
- 376 people in postgraduate programmes.

538 foreign students study at the university.

Over the entire history of the university, more than 200,000 specialists have graduated.

The university includes 4 institutes, 11 faculties, 68 chairs, 5 research and design institutes, 28 scientific and engineering centers.

The infrastructure of the university includes 17 academic buildings, 1 sport complex, 3 tourist recreational centers.

The university has 3,188 members, 1,147 of which are members of the academic staff, including 611 candidates of sciences and 151 doctors of sciences.

There are 7dissertation councils at the premises of the university.

Citation of articles published over 5 years in scientific periodical publications, indexed in the Web of Science database – 3,035, Scopus – 4,504, RSCI – 22,153.

The analysed programmes "Chemical technology of high-molecular compounds" (hereinafter the CTHMC), "Chemical technology of organic substances" (hereinafter the CTOS) and "Chemical Technology of natural energy carriers and carbon materials" (hereinafter the CTNECCM), were developed as part of the field of study 18.03.01 Chemical technology.

The enrollment of students in the analysed programmes is:

CTHMC 1st year – 19 people, 2nd year – 23 people, 3rd year –21 people, 4th year – 12 people.

CTOS 1st year – 26 people, 2nd year – 24 people, 3rd year – 37 people, 4th year – 30 people.

CTNECCM 1st year – 50 people, 2nd year – 54 people, 3rd year – 45 people, 4th year – 31 people.

Subjects discussed in the self-evaluation report

1. **Basic parameters** (tick the block field as □):

a) □ 180 ECTS credits; □ 240 credits; □ other ..... credits;

b) degree **programme contains** □ analytical chemistry; □ inorganic chemistry; □ organic chemistry; □ physical chemistry; □ biological chemistry (or any bio-oriented discipline) in sufficient volume;

c) □ 90 **credits** or more **cover** the areas of analytical chemistry, inorganic chemistry, organic chemistry, physical chemistry, biological chemistry (or any bio-oriented discipline), physics, and mathematics;

d) □ students are proficient in **second** (major European) **language** as well as in the language of the institution country;

e) □ during the programme there is enough of the **practical training** (hands-on);

f) □ **bachelor thesis** carries at least 15 credits;

g) □ **ECTS credits** are used and calculated as workload;

h) **ECTS grading** (ABCDEF) is used; □ **ECTS grading** (ABCDEF) is not used and corresponding transfer table is/will be used and published in every Diploma Supplement and in student exchange documentation;

i) □ **Diploma Supplement** in EU style is/will be automatically given to every graduate for free;

j) □ System of **Quality assurance** is implemented.

2. Learning outcomes: Chemistry-based Practical Skills

Study programmes are containing all required chemical disciplines. There has to be appreciated the enthusiasm of the University administration and teaching staff in reaching the best status and quality of education. Students well prepared in individual technical and chemical disciplines. The team found that students, despite the good knowledge in the disciplines, are not able to apply the knowledge in broad scope of chemical disciplines and generally natural sciences or general life, students had problems in understanding safety. The SVT feels that the Practical Skills training shall be enhanced and improved.

3. Content

Generally, the content of theoretical education is good, balanced and well prepared. The program includes 52 disciplines and 6 practical courses. The disciplines assessed in the form of an exam are 26, in the form of a test with a mark of 6, 20 disciplines are certified in the form of a test, 6 practical courses are assessed in the form of a test with a grade.

Competence-oriented curricula are up-to-date and fully meet the requirements of the Federal State Educational Standard of Higher Education and the relevant objectives of the educational system. All study programmes are coordinated with employers. Programmes are being updated in accordance with the professional standards since 2021.

4. ECTS and Student Workload

For the entire study period (four years), students spend 132 academic weeks on training. One credit point corresponds to 36 hours, comprising all possible types of classes, including self-preparation for tests and examinations, the time for which is allocated in proportion to the workload. The volume of the maximum weekly study load at the university is not standardized, and in practice amounts to about 55 hours. University seemingly uses “credits” simply recalculated from contact hours not as real workload measure (ECTS credits) where students shall have their influence on their value, based on their educational experience.

5. Modules/Course Units and Mobility

As it was already stated, modules and courses are reasonably distributed and planned. However, sometimes the non-integer and low credit value raised discussion. Learning outcomes, with the exclusion of safety and practical skills are reasonable.

Mobility of students is possible at all stages of training and, in some cases, there is an exchange over the border. No course units/modules are defined as "non-transferable".

6. Methods of Teaching and Learning

Methods of teaching and learning are to some extent "classical". There should be recommended that the education goes more "in context" and "hands on".

The mentoring system is implemented through the institute of curators of academic groups. As the practice of real project activities is introduced and developed, mentoring in the format of guiding project student teams (project mentor), tutoring for project activities and mastering online courses is used for online training. Training in small groups is used for laboratory classes within practical and theoretical disciplines, if so provided by the discipline programme, for example, when conducting business simulation games. Within the framework of the project module, team project work of students is carried out.

The assignation of a single day for project works in the SamSTU schedule (once every two weeks) makes it possible (if necessary) to form project teams from students of various fields, years and levels of study (interdisciplinary project teams).

Classes dedicated to solving problems and discussing professional tasks, are implemented in all disciplines of the programme in one volume or another, as well as within the framework of project (research) work of students. SamSTU uses e-learning technologies and distance learning systems. Access to the educational electronic resources of SamSTU is open from any computer connected to the Internet. Such disciplines as History, Jurisprudence and Philosophy are implemented in a mixed format: a course of lectures is provided in an online format through the distance learning system of SamSTU based on the Moodle platform. EChem Tests are not used, otherwise, electronic media are in use. For online testing according to the study years, the base of test tasks and computer-based testing system of SamSTU are used. Bachelor's thesis is usually carried out in the form of an engineering project in order to confirm competencies in the field of working with scientific and technical information, selection and justification of schemes and parameters of chemical and technological processes, application of computational methods and presentation of work results.

It is recommended to continue expanding the range of the applied technologies and methods of educational activities. It is advisable to design and arrange continuing professional development of the academic teaching staff, including in terms of the use of modern technologies of educational activities specific to the study programmes in the field of chemical technology.

7. Assessment procedures and performance criteria

Assessment procedures are normal, verbal, written etc. Examinations (pass-fail tests) are held at the end of each semester in accordance with the curriculum. The State (Final) Examination is conducted to check the level and quality of students' training. The state examination enables to identify and evaluate the theoretical training of a graduate to solve professional tasks and readiness for the main types of professional activity. Oral examinations are predominantly used for vocational disciplines. Pass-fail tests can be set for the disciplines of the general education and basic module (1^{st} -2^{nd} year of study). The use of a cumulative system is provided for assessing learning outcomes. When conducting examinations (pass-fail tests), the ongoing monitoring results of a semestrial academic performance are taken into account. Depending on the scope of a discipline and the number of students, an additional one or two

teachers may be involved in examination supervising as examiners. When passing an examination, a student is provided with a feedback in the form of correct answers. Performance criteria are "local" and shall follow the suggestion in the next paragraph (7. Grading).

8. Grading

In the Self-assessment report the question to grading was not understood well and was mixed with question to workload. University shall include the local to ECTS grading "translation" table in the Diploma Supplement and in results transfer documents of exchange students.

9. The Diploma Supplement

As part of the practice that has established at the university, the European Supplement is drawn up on an individual request of any university graduate on the blank forms of the Spanish company Signe, S.A. The Supplement describes the level, status, content and outcomes of the received education in Russian and English. Additional information about the holder of the diploma and his qualifications, as well as the content and learning outcomes in credits of the European Credit Transfer System (ECTS) is provided in the document in English. SVT draws the attention of the university that every student from the course with EuroLabel must get the Russian/English Diploma Supplement automatically and free.

10. Quality Assurance

There is in place regular monitoring of all aspects, students, teachers, departments and procedures. At the university and at the management level of the study programmes, the current system of the education key quality indicators continuous monitoring and approaches to its internal and independent assessment has been adopted and accepted by all the parties concerned; the outside experts are involved and there are regular procedures for receiving feedback from employers, students and graduates.

Internal quality assessment includes annual monitoring of the study programmes (quality of students' training and resourcing of educational activities), assessment of students' satisfaction with the quality of a study programme, educational process organisation and conditions for extracurricular activities, and students' assessment of the quality of teaching for individual disciplines.

The formation of data, including the outcomes, is carried out in the AIS "Universitet". Specialised units summarise the outcomes and provide them to the university administration, heads of faculties (institutes) and chairs, and to the study programmes directors through the local information network of the university. Based on the results of the monitoring and questioning, considering the key directions of modernisation of the educational activities of SamSTU, the changes aimed at updating the content (excluding/introducing academic disciplines or their parts) and redesigning educational activities are annually introduced into the programme. Since 2016, while retaining the extent of a fundamental training, the practical component has been enhanced: the module of project activities has been introduced and expanded (team project work, elements of business education).

11. Employability

The proportion of the student enrollment within the concentration programme, admitted for training in master's programmes, and who have completed training in Bachelor's programmes is 25-40%, including Master's programmes of other fields of study and other universities, and is 17,8% in the field of study 18.04.01 within the framework of SamSTU. The remaining graduates are employed at about 100%, taking into account the graduates who have started their own business.

12. Ethical concern

Ethical concern is reflected in several courses as sociology, psychology of social communication i.a. Drafting of a FQW requires scrupulous citation in accordance with the generally accepted ethical and legal standards. Implementation of this requirement is reflected in the review of an FQW scientific advisor based on the results of a FQW revision to define amount of a matching content, including identification of plagiarisms. In accordance with the SamSTU Regulations on the procedure for State Final Examination, a scientific advisor should submit a student's FQW for its verification in the "Antiplagiat. VUZ" system through an advisor's personal account, and then pass the information on the verification results in due time.

13. Any other comments / information

The university possesses significant material and technical resources. The purchasing of equipment is funded, among other things, with grants for research and development works. An insignificant number of laboratories are equipped by the aid of employers. When analysing the Self-Evaluation Report, there is a discrepancy between the high proportion of FQWs prepared on the topics suggested by employers, and a zero valuation of the practical implementation of FQWs results. In addition, it is noted that although representatives of employers coordinate all the study programmes, there are no examples of specific competencies developed with the participation of employers.

Persons seen

Discussion with representatives of the institution's leadership

1. *Yusupova O.V.* – Vice – Rector for Academic Affairs;
2. *A.S. Zotova* – Vice – Rector for International Cooperation;
3. *Kostyleva I.B.* – Counselor at the Rector's office of SamSTU;
4. *Alontseva E.A.* – Head of Educational Department;
5. *Smirnova S.B.* – Head of the Department for Work with Industrial Partners;
6. *Malinovskaya Y.A.* – Head of Development Coordination Department;
7. *Prokofieva E.Y.* – Head of the Department for Work with Foreign Students;
8. *Safronov V.V.* – Dean of the Faculty of Chemistry and Technology (CTF);
9. *Nechaeva O.A.* – Director of the Institute of Oil and Gas Technologies (INGT);
10. *Novokshchenov* S.G. – Director of the Scientific and Technical Library;
11. *Saushkin I.N.* – Head of Informatization and Telecommunications Department;
12. *Vaskov E.N* – Head of the Department for Educational and Social Work;
13. *Gereykhanova E.E.* – Chairman of the Student Council;
14. *Frank K.V.* – Chairman of the Student Union Committee;
15. *Blatov V.A.* – Head of General and Inorganic Chemistry Chair;
16. *Klimochkin Yu.N* – Head of Organic Chemistry Chair;
17. *E. L. Krasnykh* – Head of Technology of organic and petrochemical synthesis Chair;
18. *Tupitsyna O.V.* – Head of Chemical Technology and Industrial Ecology Chair;
19. *Tyshchenko V.A.* – Head of Chemical technology of oil and gas processing Chair;
20. *Mashchenko Z.E.* – Head of the Monitoring Division of the Licensing and Accreditation of Educational Programs Department.

Discussion with those responsible for the programme

Sokolov Alexander – Associate Professor of the Department of "Technology of organic and petrochemical synthesis"

Eremina Yulia **–** Associate Professor of the Department of Chemical Technology of Oil and Gas Processing

Discussion with members of the teaching staff

1. *Levanova Svetlana* – professor
2. *Portnova Svetlana* – associate professor
3. *Sarkisova Victoria* – associate professor
4. *Safronov Sergey* – associate professor
5. *Moiseeva Svetlana* – associate Professor
6. *Maksimov Nikolay*, associate professor
7. *Pimerzin Alexey* – associate professor
8. *Solmanov Pavel* – associate professor
9. *Stifatov Boris* (videoconference)
10. *Vasilyeva Natalia* (videoconference)
11. *Petinova Marina* (videoconference)
12. *Tikhonov Vladimir* (videoconference)
13. *Kandrashkina Oksana* (videoconference)
14. *Limanova Larisa* (videoconference)
15. *Kosareva Evgeniya (*videoconference)

Meeting with the students

1. *Alekseev Matvey*
2. *Vorozheikina Daria*
3. *Kerentseva Alina*
4. *Nikitina Alina*
5. *Petrushchenkov Danila*
6. *Strebkova Angelina*
7. *Trifonov Pavel*
8. *Khvalin Vadim*
9. *Shiryaeva Anna*

Meeting with graduates

1. *Kosyakova Olesya*, Category 3 Production and Commissioning Engineer, LindeEngineering (videoconference)
2. *Fetisov Dmitry*, Engineer of the Department of Technical and Petrochemicals, Master's student of SamSTU
3. *Yamshchikova Yulia*, Engineer of the Department of Organic and Petrochemical Synthesis Technology, Master's student, SamSTU
4. *Zarubin Andrey*, shift supervisor, shop 22. PJSC KuibyshevAzot (videoconference)
5. *Adilova Makhpal*, engineer of the 2nd category, SamaraNIPIneft (videoconference)
6. *Spiridonov Stanislav*, operator of the 5th category, JSC NkNPZ (video conference)
7. *Golubkina Lyudmila*, laboratory engineer, SC "Schlumberger Lozhelko Inc.", laboratory for the study of reservoir fluids (videoconference)
8. *Emelyanov Vladimir*, Assistant of the Department of Technical and Petrochemicals, postgraduate student, SamSTU
9. *Frolova Vasilina*, JSC KNPZ, TsZL
10. *Zurnina Anna*, Engineer of the Department of Chemical Technology of Oil and Gas Processing, Postgraduate Student, SamSTU
11. *Timoshkina Viktoria*, Engineer of the Department of Chemical Technology of Oil and Gas Processing, Postgraduate Student, SamSTU
12. *Belonosov Andrey*, Head of equipment, JSC NKNPZ (videoconference)

Uchaev Vitaly, Process Unit Operator, JSC NKNPZ

Meeting with representatives of employers

1. *Tatyana Sokolova*, Head of the Personnel Development and Evaluation Department, Novokuibyshevskaya Petrochemical Company»
2. *Filatova Marina*, Head of the Personnel Recruitment, training and Development Department, LLC " Tolyattikauchuk "(video conference)
3. *Timerbulatova Aleana*, Leading recruitment Specialist, LLC "Tolyattikauchuk" (video conference)
4. *Fokeeva Regina,* Leading recruitment Specialist, LLC "Tolyattikauchuk" (video conference)

Subjects discussed during the site visit

1. Representatives of institution's leadership

The issues on correlating the strategies for the development of the study programmes with the University strategic development programme were discussed. A high level of interrelation is noted, achieved through the discussion of strategic documents at all levels of administration with the active participation of the academic staff and students of the university. The issues related to the tactical actions of the university and management of the programmes during the pandemic of the new coronavirus infection COVID-19 were discussed. The university administration emphasizes a high level of cooperation and shared understanding with employers, as well as fixation on finding the best possible balance between the chemical and technological content of the programmes. The university actively uses modern approaches to financial and non-financial incentives for the academic staff and rating procedures for chairs and members of the academic staff. The procedure for obtaining feedback from students is extensively used, however, the collection of this information is carried out using the students' personal accounts, although it is processed on an anonymous basis. During the discussion, it was established that the international Diploma Supplement is not issued automatically, but only on the request of a student, and its drafting is not free

2. Persons responsible for the programme

The discussion reveals a significant enthusiasm of the study programmes heads, shared by the teachers involved in the programmes. Attention is drawn to the efforts made to form and maintain a favourable social and psychological atmosphere and comfort in the teaching and student bodies. Directors of the programmes arrange the individual professional development of the teachers involved in the programme and stimulate them to participate in research activities. It is noted that the university has developed a management system for the study programmes, which is applicable in parallel and do not contravene the traditional faculty and chair university management model.

3. Members of the teaching staff

During the discussion, a high professional level of the academic staff was noted, as well as their focus on achieving the best educational results due to the high internal quality standards. A low level of satisfaction with the organisation of the advanced professional training system is noted, since the existing model does not sufficiently take into account the interests of teachers regarding their professional development, as well as the support of post-graduate students.

This information corresponds with the data of the Self-Evaluation Report, from which it follows that over the past three years, an insignificant number of teachers have undergone the advanced professional training. At the same time, it is noted that the ongoing programmes affect various aspects of the activities of teachers, including both chemical and technological retraining, and upgrading of teaching skills. During the discussion, it was also noted that although the university possesses all the equipment necessary for the educational and research processes, its accessibility is different for representatives of various study programmes. There is also a low level of external domestic and foreign contacts.

4. Discussion with students

The meeting with the students showed a high level of their satisfaction with the quality and relevance of their education, as well as with the quality of the educational environment at the university. Students note that they perfectly know the difference between the content of bachelor's and master's study programmes. It is emphasized that graduates of the bachelor's degree level are in high demand in the labour market, which is also corresponds to the

information received at the meeting with the employers. Students are also satisfied with the quality of student services and the fact that the university supports any of their initiatives within the framework of extracurricular activities and offers appropriate activities for this. Students report a high dropout rate (large numbers of expulsions) among students with low performance level. During the discussion, it was also pointed out that a number of practical trainings are pro forma, and in the course of these trainings students have limited access to the production equipment, which limits the opportunities for the development of professional skills.

5. Discussion with employed graduates

Graduates point out a high level of their relevance in production, as well as considerable opportunities for further professional development and career progression. Attention was drawn to the fact that the vocational guidance would be easier if during the training period more meetings were organised with employers' representatives, especially master classes from working professionals who are graduates of the programme. The importance of the informal community of graduates, which has been increasing in recent years due to the development of social networks, is emphasized.

6. Discussion with employers' representatives

All employers confirm the high level of graduates' training and their constant demand in the labour market, as well as a high level of cooperation and mutual understanding between the university and employers. The important role of master classes in the educational process is noted, as well as the importance of employers in the organisation of practical trainings. At the same time, employers support the reasonability of students' concerns about a limited access to the production equipment, referring to the existing access regulations.