

ASIIN Seal & European Labels

Accreditation Report

Bachelor's Degree Programmes Electrical Engineering and Automation Communication Engineering Software Engineering Internet of Things Engineering

Provided by College of Mobile Telecommunications, Chongqing University of Posts and Telecom

Version: 03 December 2020

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A About the Accreditation Process

Name of the degree programme (in origi- nal language)	(Official) English translation of the name	Labels ap- plied for ¹	Previous ac- creditation (issuing agency, va- lidity)	Involved Technical Commit- tees (TC) ²						
电气工程及其自动化	Ba Electrical Engi- neering and Au- tomation	ASIIN, EUR- ACE [®] Label	n/a	02						
通信工程	Ba Communica- tion Engineering	ASIIN, EUR- ACE [®] Label	n/a	02						
软件工程	Ba Software Engi- neering	ASIIN, Euro- Inf [®] Label	n/a	02, 04						
物联网工程	Ba Internet of Things Engineer- ing	ASIIN, Euro- Inf [®] Label	n/a	02, 04						
Date of the contract: 21.11.2017										
Submission of the final version of the self-assessment report: 13.12.2018										
Date of the onsite visit: 15./16.04.2019										
at: College of Mobile Telecommunication in Chongqing										

Peer panel:

Prof. Dr. Dirk Dahlhaus, University of Kassel;

Prof. Dr. Jürgen Ebert, University of Koblenz;

Prof. Dr. Reinhard Möller, University of Wuppertal;

Mr. Jiegu Asa, United Automotive Electronic Systems Co., Ltd;

Ms. Tan Rong, Bachelor student at University of Shanghai for Science and Technology

Representative of the ASIIN headquarter: Dr. Siegfried Hermes

¹ ASIIN Seal for degree programmes; EUR-ACE[®] Label: European Label for Engineering Programmes

² TC: Technical Committee for the following subject areas: TC 02 – Electrical Engineering/Information Technology); TC 04 – Informatics/Computer Science

Responsible decision-making committee: Accreditation Commission for Degree Programmes

Criteria used:

European Standards and Guidelines as of 15.05.2015

ASIIN General Criteria, as of 10.12.2015

Subject-Specific Criteria of Technical Committee 02 – Electrical Engineering and Information Technology as of 09.12.2011

Subject-Specific Criteria of Technical Committee 04 – Computer Science/Informatics as of 09.12.2011

B Characteristics of the Degree Programmes

a) Name	Final degree (origi- nal/English translation)	b) Areas of Specializa- tion	c) Corre- sponding level of the EQF ³	d) Mode of Study	e) Dou- ble/Joint Degree	f) Dura- tion	g) Credit points/unit	h) Intake rhythm & First time of offer
Electrical Engi- neering and Automation	B.Eng.	n/a	6	Full time	n/a	8 Se- mesters	240 ECTS	Fall semester 2006/07
Communica- tion Engineer- ing	B.Eng.	n/a	6	Full time	n/a	8 Se- mesters	240 ECTS	Fall semester 2002/03
Software Engi- neering	B.Eng.	n/a	6	Full time	n/a	8 Se- mesters	240 ECTS	Fall semester 2008/09
Internet of Things Engi- neering	B.Eng.	n/a	6	Full time	n/a	8 Se- mesters	240 ECTS	Fall semester 2013/14

For the <u>Bachelor's degree programme Electrical Engineering and Automation</u> the institution has presented the following profile in the self-assessment report:

"Professional knowledge, professional skills and career directions of electrical engineering and automation are power system operation control and design analysis, motor control, electrical equipment and control, electrical mapping and computer graphics, in order to produce outstanding engineers with knowledge acquisition capabilities, engineering practice capabilities, innovation capabilities, teamwork, and organizational management leadership. They are capable of modern large-scale power plants and power system operation, design and maintenance and installation of electrical equipment, installation and commissioning, electrical equipment operation and maintenance in general industry, electrical control design of electromechanical systems, production design and technical management of equipment."

³ EQF = The European Qualifications Framework for lifelong learning

For the <u>Bachelor's degree programme Communication Engineering</u> the institution has presented the following profile in the degree regulations:

"The communication engineering major trains students to adapt to the development trend of modernization, digitalization, information society and global economic globalization, to have the basics of communication and information technology, information network technology, professional technology application capabilities and engineering literacy of the entire network. To have basic knowledge and management skills in business management, communication and cooperation skills, sunshine mentality, and physical fitness in order to cultivate compound talents who can design, operate, optimize, manage, market, develop, manufacture, and support technical communications, electronic information, and broadcast television. "

For the <u>Bachelor's degree programme Software Engineering</u> the institution has presented the following profile in the self-assessment report:

"The software engineering training program takes the theory, method, practice and application involved in software engineering as the direction of learning and employment and is committed to the development of excellent engineers with good social adaptability, international vision and engineering practice. They have a strong theoretical foundation and professional knowledge, and can engage in software industry related development, design, operation and maintenance, optimization, management, marketing and other work."

For the <u>Bachelor's degree programme Internet of Things Engineering</u> the institution has presented the following profile in the degree regulations:

"The Internet of Things Engineering Training Program takes the theory, methods, practices and applications involved in the Internet of Things system as the direction of learning and employment. By constructing a scientific and rational curriculum structure system, this program cultivates engineers with excellent knowledge, quality and ability in the development, design, operation and management of the Internet of Things. They have mastered the necessary basic theories and professional theories and skills. They can work on the production, installation, maintenance, management, application, development and planning, design and marketing of various software and hardware devices of the Internet of Things."

C Peer Report for the ASIIN Seal⁴

1. The Degree Programme: Concept, content & implementation

Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)

Evidence:

- Relevant chapter of the SAR
- Resp. document "Professional Training Program", Appendix B1 B4
- Objectives module matrices in the SAR (pp. 14 25)
- Objectives module matrices, Appendices B9 B12
- Audit discussions

Preliminary assessment and analysis of the peers:

Qualification objectives for each of the four Bachelor's programmes have been defined at different occasions. The self-assessment report as well as the comprehensive programme information document "Professional Training Programme" do consist of learning objectives clearly related to the Bachelor's level (level 6 of the European Qualification Framework⁵). So do different versions of objectives-module matrices in the SAR and in the appendices, too. Although slightly differing in its phrasing, the competence profiles related to each Bachelor's programme could be considered correspondent to and largely covering the respective curriculum. Since the experts assume that the condensed degree-related information in the document called "Professional Training Programme" is handed over to or available for the students, they henceforward refer to the learning objectives conveyed there.

Principally positively noted is that each qualification profile is inherently structured along the lines of general educational objectives (including a so-called "well-rounded education")

⁴ This part of the report applies also for the assessment for the European subject-specific labels. After the conclusion of the procedure, the stated requirements and/or recommendations and the deadlines are equally valid for the ASIIN seal as well as for the sought subject-specific label.

⁵ See <u>https://ec.europa.eu/ploteus/content/descriptors-page#footnote2</u> (Download 05.05.2019).

and professional qualifications. Personal and moral values do carry a considerable weight in all curricula, which is principally worthwhile, since higher education to some extent also aims at forming the character, ethics, social attitude and behaviour of the individual student. One might argue about the concrete contents of this non-professional, general education. In principle though, this kind of personality building embedded in an undergraduate engineering programme and the related competence objectives⁶ are appreciable.

Nor should be underestimated, what the study of compulsory non-professional subjects in such disciplines as philosophy, social science, political science, history as well as Arts and Humanities contributes to the personal development of the graduates, particularly in pursuing their professional life.

Otherwise, in order to achieve these competencies, the curriculum planners have to spend one seventh of the total ECTS credit load. Admittedly, these parts of the curricula are predetermined through national legislation, and are not up to the disposal of the responsible college. Irrespective of this, the percentage of non-professional subjects is relatively high.

Looking more specifically at the professional learning objectives of the different programmes, it becomes apparent from the description that the qualification profile of the Electrical Engineering and Automation programme essentially consists of basic competencies in Mathematics, Natural Sciences, Computer Science and Electrical Engineering. The professional education in the later study stages evolves around some basic Control Engineering skills and, especially, competencies in the field of Electrical Power Engineering. At one point in the report (SAR, p. 46), it is outright stated that the *Power Engineering Design* module (spanning from the fourth to the sixth semester) "is the focus of the major, which lays the foundation for (the) subsequent graduation internship and graduation design". However, the list of qualifications aimed at in the programme is much broader, embracing electrical engineering competencies to a remarkable degree: "Acquire the ability to solve electrical engineering problems, engage in electrical engineering design, repair and maintenance of electrical equipment, operation and control of electrical systems, installation and commissioning of electrical equipment, production design and technical management of equipment and equipment, etc. In this field of expertise, they (i.e. the students) have capabilities to do certain scientific research, capability of scientific and technological development, organization and management, the adaptability and capabilities of organizational

⁶ Such as, for instance, "Broaden their (i.e. the students') horizons, have a certain degree of scientific spirit and humanistic qualities, critical thinking; have a certain artistic accomplishment and aesthetic ability; have good team spirit and effective communication, coordination and cooperation; have the courage, innovation, will, perseverance and spirit [...]; Master certain basic sports knowledge and scientific basic physical exercise skills, have good physical exercise and hygiene habits, have a healthy body and good psychological quality, respect life, care for others".

management". In fact, this might be consistent and even expectable when looking at the programme's name. It is, however, hardly in accordance with the breadth and depths of what is being taught in the programme (see sec. 1.3).

Regarding the competence profiles of the other programmes, they are generic in a literal sense referring broadly to programme-related competencies without genuinely describing them. Thus, for instance, graduates of the Software Engineering programme are said to "master the knowledge and skills of software engineering, and possess the professional capabilities required by software engineers to engage in engineering practice" and to "master system software and application software analysis, design and development capabilities". This phrasing of intended qualifications at once appears to be too generic to be assessed against the curriculum and too demanding to be implemented by the actual curriculum. Similarly, the graduates of the Internet of Things Engineering programme are expected to "Master the knowledge and skills of IOT engineering, and possess the professional capabilities required by software engineers to engage in engineering practice" and to "master IOT system and application software analysis, design and development capabilities". This not only remains unclear of the specific competencies graduates have with a view to the issues related to the IOT engineering. It also – intentionally or not – points to considerable overlaps between this programme and the Software Engineering programme, also reflected in the curriculum of both. Further, the objectives of the Electrical Engineering and Automation programme and the Communications Engineering programme show significant similarities in the field of the engineering fundamentals, largely focusing the specialty in the more advanced study phases.

As a result, the qualification objectives of the degree programmes under review in connection with the programmes' structure and related curricular contents leave the experts with doubts about the focal points of each programme. Similarities and overlaps between the programmes, which are inherent in the often-imprecise or generic phrasing of the intended qualifications and explicit in its curricular contents, significantly contribute to this impression. On the other hand, the specialty of each programme appears to be packed in comparatively small curricular proportions in the later study period (fifth to seventh semester), hardly adequately expressed nor differentiated in the respective descriptions of the programme learning objectives. Consequently, the peers consider it necessary to draft the educational objectives at the programme level more precise with a specific focus on the differentiation between the programmes and their strong orientation towards applications. In addition, these objectives should be made available for all relevant stakeholders and included into the respective Diploma Supplement (as to the latter see also sec. 5.2).

In this context, it is positively taken into account that there is a vigorous feedback culture between the college and the cooperating industry in the field. Qualification demands of

regional companies as core employers of the graduates apparently make their way into the process of setting up and further developing degree programmes. The industry representatives as well as the generally high esteem of the graduates in the companies attest to this assessment.

Criterion 1.2 Name of the degree programme

Evidence:

- Respective chapter of the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

The peers learnt that specialty-related programme titles are more or less fixed by ministerial regulation - independent of the concrete curriculum design - and cannot be changed autonomously by the Higher education institution (HEI). Nevertheless, they generally stress that the programme title needs to be in line with both the intended learning outcomes of the programme and the curriculum set to achieve these objectives. With a view to the above-mentioned deficiencies and the apparent curricular similarities and overlaps (see sec. 1.3), the peers are not convinced that the programme names do perfectly match the intended competencies and curriculum of each programme. From the peers' perspective, this is most visible in case of the Electrical Engineering and Automation programme. Neither the intended learning outcomes nor the curricular contents do plausibly demonstrate the common understanding of "Electrical Engineering" in general and "Automation" in particular. The programme coordinators themselves underline the Electrical Power Engineering focus of the programme, although basic competencies shall also be acquired in control theory and automation processes. However, similarities and/or overlaps in the curricula of the other degree programmes (Software Engineering vs. Internet of Things Engineering; Communications Engineering vs. Electrical Engineering and Automation) leave the peers with doubts about the accuracy of the respective programme title. In sum, the programme coordinators need to make sure and provide evidence for each Bachelor's programme that the name of the degree programme, its intended learning outcomes and its content correspond with each other. For the above-mentioned reasons, this is considered more difficult for the Electrical Engineering and Automation programme. However, it applies to the Communication Engineering, the Software Engineering and the Internet of Things Engineering programmes as well.

Criterion 1.3 Curriculum

Evidence:

- Respective chapter of the SAR
- Respective "Professional Training Program", Appendices B1 B4
- Curriculum of each degree programme, Appendices C1 C4
- Module Handbook of each degree programme, Appendices B5 B8
- Department's autonomy in curriculum design, Appendix 1 of the Additional Material
- Graduate Survey, Appendix S
- Graduate Employment Quality Report (2014 2017), Appendix T
- Employment of Graduates, Appendix 4-1 of the Additional Documentation
- Employment Statistics, Appendix 4-2 of the Additional Documentation
- Audit discussions

Preliminary assessment and analysis of the peers:

The <u>Bachelor's programmes under consideration</u> are application-oriented in the first place. The curricula are science-based without being distinctively research-oriented. Graduates are supposed to have a solid ready-to-use knowledge in their professional field of expertise, but, in general, are not trained for an academic career. This principle assumption is underlying the expert teams' assessment of the curricula of the <u>Bachelor's programmes</u>.

Regarding that, the peers are convinced that the <u>four Bachelor's programmes</u> offer study opportunities in technologically advanced fields of engineering with a high demand for a qualified workforce. Consequently, there should be bright job perspectives for the graduates of <u>the degree programmes</u> on the relevant tech labor market, which is confirmed by the impressively high employment numbers <u>across the programmes</u>, as provided by the College. Employment rates of 90% and more of the cohorts between 2014 and 2017 in mostly regional companies matching the graduates' qualifications attest to this finding.⁷ This record per se strengthens the close contacts and manifold cooperation between the College and the regional tech industries. Otherwise, the feedback of the companies appar-

⁷ That is Chongqing's information transmission, software and information technology industries in case of the <u>communications-related engineering programmes</u> and Chongqing's electricity, heat, gas and water production and supply industries in case of the <u>Electrical Engineering and Automation programme</u>.

ently ensures a curriculum design that above all reflects the competence needs and demands of the respective industries. On request, the industry representatives essentially agreed with this notion.

Thus, the audit team acknowledges that, particularly regarding the communications-related programmes (Communications Engineering, Software Engineering and Internet of Things Engineering), the College successively has set up new undergraduate programmes according to newly arising technological developments and demands in the field. Likewise, new institutional divisions seem to have spread along with the establishment of new degree programmes (College of Intelligent Engineering, College of Communication and Internet of Things Engineering, Big Data and Software College). However, it is irritating that instead of the college of the same name the Big Data and Software College operates the Internet of Things Engineering programme. More generally, the organizational differentiation as such, particularly with regard to the communication-related programmes, is hardly comprehensible, since in all events it increases the coordination costs of the involved organizational units. Otherwise, it should be noted that the College - according to the information in the module handbooks – makes some use of synergies in the allocation of (personnel) resources across degree programmes and organizational units. This counts particularly for the Natural Science and Computing basics in <u>all programmes</u>. But it also applies for large parts of nearly identically composed "modules" in the Software Engineering and Internet of Things Engineering programme as well as certain Engineering fundamentals in the Electrical Engineering and Automation respectively Communications Engineering programmes. Irrespective of this, the experts receive the impression that the coordination between degree programmes, modules and courses across the lines of the individual programme leaves room for improvement.

As already indicated, the contents and intended objectives (according to the module descriptions) to a large degree are plausible only under the presumption of a strong orientation towards knowledge application in professional contexts. In general, many subject-related courses do not lead to a deep theoretical understanding of the matter, but instead follow the intention to give students hands-on knowledge, skills and competence in order to enable them to solve practical engineering problems in related professional fields. Otherwise, the calculated ECTS volume of most courses and, in particular, the included selfstudy time would hardly be sufficient. With this qualification however, the curricula correspond to the exemplary engineering specific competences in the areas of Engineering Fundamentals, Engineering Analysis, Engineering Design, Engineering Practice and Transferable Skills of the Subject-Specific Criteria of the relevant ASIIN Technical Committees. This has been plausibly demonstrated in the module-objectives matrices included in the SAR. Going more into the details of the curricula, these have to be measured in the first instance against the intended qualifications at the programme level. In addition, the course contents and objectives should also fit the programme name. As stated earlier in the report (see above sec. 1.1 and 1.2), the defined competence profiles of the degree programmes for various reasons do not or only partially reflect the core of the respective curriculum. In addition, concerning the Electrical Engineering and Automation programme, the intended qualifications even hardly fit the programme name. To begin with the latter, the peers doubt that the curriculum spans the range of topics, which are common parts of an Electrical Engineering programme according to international standards. For instance, crucial parts of Electrical Engineering fundamentals are simply missing. With regard to the "Automation" term in the programme title, the expert panel wonders, which courses in the curriculum could justify its prominent placement. The programme coordinators' and teaching staff's indication of the Control Engineering Courses and especially some course in the "module" (course catalogue) Engineering Fundamentals does not plausibly answer the question. The peers point to the fact that still central "automation technology" issues, such as "industrial networks" (network between components of industrial devices), the "Industry 4.0"-topics and important parts of "Communication Theory" needed in the (industrial) automation technology are absent. By contrast, the core issues and intended learning objectives of the Electrical Engineering programme refer to the Electrical Control Engineering and Electrical Power Engineering courses.

The Software Engineering programme and the Internet of Things Engineering programme, in turn, to a larger extent reveal overlapping "modules" and courses, eventually differentiating in some programme-specific courses. This might come to no surprise, since both programmes originate in the Big Data and Software College. However, the relatively broad joint education of students of both programmes also involves a significantly limited share of Software Engineering in the strict sense (in fact only one module with two courses bearing the name). Thus, topics such as Requirements Engineering, Software Architecture, Software Design, Software Modelling, Software Measurement or Software Reengineering and Evolution were essentially lacking in the curriculum. Another explanation for this finding might be the comparatively high ECTS volume of non-professional courses. In order to better fit the programme's name, deepening the Software Engineering issues would have to be considered, anyway. Otherwise, each programme-specific course not used for different study programmes requires additional material resources and teaching personnel. This is all the more relevant for degree programmes with comparatively high intake numbers. Thus, the coordinators list up to 520 students as the expected intake number per year for the Software Engineering programme.

To sum up, the peers deem it necessary for <u>all study programmes</u> to ensure that the name of the respective programme, its intended learning outcomes and its content plausibly correspond with each other. Moreover, this should be evidenced through adequate curricular adaptions, modifications or reallocations. As to that, the college follows a more convincing approach in the joint curriculum foreseen in the general and non-professional courses. Instead of designing four separate majors with an overlapping zone of different range, one might think about merging the four majors into one study programme with four independent tracks. It would be much more convincing to call such a programme "Electrical Engineering", "Electrical Engineering and Information Technology" or "Electrical Engineering and Communications". Resources could be saved for an appropriate breadth of the joint Engineering Fundamentals, while the study tracks would not require as much specification as an independent major. Additionally, graduates would have more options to progress in suitable Master's study programmes, independent of the chosen track in the Bachelor's programme. At the same time, this would allow to even deepen the Electrical Engineering and Information/Communication technology basics and thereby altogether broaden the quality level of the programme. The peer panel suggests considering such a revision of the programme. Thereby, they positively note the coordinators' clarification, that according to the relevant provisions the responsible College and departments have full autonomy in the curriculum design – at least in the major education, but apparently also (to a certain extent) in the field of general education.

The strong profession- and application-orientation of the degree programmes has been mentioned at several occasions. This is a major strength of the study programmes under review. It ensures the employability of the graduates who obviously meet the core qualification demands of the industry. The peers notice that the curriculum design and further development processes devote considerable efforts to ensure the alignment of the degree programmes with the needs of the companies. Students, graduates and industry representatives have explicitly agreed on this assessment. The downside of this observation is discussed in the previous section.

The expert panel notes that the practical competencies are fostered through practical or experimental units connected with most of the technical courses of the respective Bachelor's programme as well as different kinds of short-term and long-term internships, including a graduation internship (four to eight weeks duration)⁸. The internships include project-based internal internships at the colleges and external internships in companies. Particularly the long-term internships shall make students familiar with real-life engineering tasks

⁸ Four weeks in the <u>Communication Engineering</u> and <u>Internet of Things Engineering study programmes</u>; eight weeks in the <u>Electrical Engineering and Automation</u> resp. <u>Software Engineering study programmes</u>.

and the working environment in tech companies. In the peers' view, the internships are well integrated into the curricula. Additionally, college counsellors and, in case of the company internships, company tutors look after the students in order to guarantee that they work on engineering-related assignments during their internships. Peers also take note that the students have to prepare written reports about the internships.

The expert panel appreciates that the <u>Bachelor's programmes Electrical Engineering and</u> <u>Automation</u> and <u>Communications Engineering</u> do foresee some professional elective courses, while the <u>Software Engineering</u> and the <u>Internet of Things Engineering programmes</u> have optional courses in the general education course catalogue only. The abovementioned approach of merging the four majors into one with different tracks might also give more freedom in offering electives in the different tracks.

Criterion 1.4 Admission requirements

Evidence:

- Respective Chapter of the SAR
- Admission rules and procedure according to "Examination System and Teaching Quality Assurance", Appendix E of the SAR
- Enrolment Information for each degree programme, Appendices R1 R4
- Audit discussions

Preliminary assessment and analysis of the peers:

The admission requirements and procedural rules for the undergraduate programmes are a complex mixture of national, provincial / City provisions⁹, college regulations (college entrance exam), and a pre-set admission plan for full-time ordinary colleges and universities issued by the Ministry of Education. As a result, they lead to an allocation list of enrolment numbers across 28 Chinese provinces. Coordinated by the admission offices of the provinces or cities, the College of Mobile Telecommunications is competent to adjust the enrolment plan among different majors. The admission decision of the College needs to take into account the applicants' preferences of universities as well as examination scores and, if necessary, combined subject scores (Chinese and Mathematics). Admission procedures – according to the programme coordinators – are strictly adhered to and supervised by the responsible provincial admission offices as well as the College itself. In case of negative admission decisions, the College is required to explain the outcome to those applicants,

⁹ Prerequisite is a high school certificate or equivalent, which qualifies for the admission to the national entrance examination or unified examination in the relevant provinces and cities.

who have been assigned to but not accepted by the College. In the opinion of the peers, these rules are clearly designed to and may actually work in favour of a fair admission practice. They also contribute to the transparency of both the admission procedure and the final decisions.

The College has provided enrolment lists and numbers for all degree programmes (for the study years 2013 – 2017). As expected, the admission and enrolment numbers of Chongging region are by far the highest, with enrolment numbers of applicants of other provinces and cities up to 30 to 40 p.a. at a maximum. The lists also reveal that the entrance examination scores vary widely between the different provinces, which is evidence of highly divergent educational qualifications of the applicants. This, in turn, requires the College to decide on appropriate supporting measures for students in their Freshman study period in order to avoid early withdrawal and at the same time maintain the quality level of the study programmes. As the peers learnt from the students, the multi-level mentoring- and tutoring system of the College (student counsellors, class tutors and academic tutors) as well as self-initiated learning groups are very successful in closing apparent learning gaps and adjusting divergent levels of knowledge. In view of the different knowledge background of the applicants, the peers consider this support system as an important quality assurance instrument. Graduation and employment rates of the four Bachelor's degree programmes illustrate that the suspension or withdrawal rate is almost negligible across the programmes, apparently due to, inter alia, the close monitoring and support system of the College.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 1:

The expert panel considers the demands of the above criterion *not fulfilled satisfactorily*.

Programme learning outcomes / qualification profile of the graduates

The peers take note of the additional information given by the College of Mobile Telecommunications regarding the essentially application- and profession-oriented design of the Bachelor's programmes under review. They clearly acknowledged this design focus in their preliminary assessment. They are also aware of the fact of relatively far-reaching national regulations concerning the individual HEI's autonomy in naming and developing educational degree programmes of certain specialties. However, given the proximity of the Bachelor's programmes, it is indispensable from the peers' perspective that the programme objectives and learning outcomes be phrased as precise as possible in order to clarify the foci of the different programmes as well as the strong application-orientation they all have in common. The expert panel proposes a requirement to that end (see below, sec. F, A 2.).

Name of the programmes, learning outcomes and curricular content

The peers note and understand the evolution of the <u>degree programmes</u> within the institutional framework of the College of Mobile Telecommunications. They welcome the curricular modifications the programme coordinators plan to implement, in particular in the <u>Software Engineering</u> and the <u>Electrical Engineering and Automation programmes</u>. Nevertheless, the panel considers it necessary that – apart from specifying the respective programme learning outcomes (see previous paragraph) – the curriculum of each programme must be revised to ensure the coherence and consistency of the programme title, the learning outcomes and the content, respectively. This issue has been discussed in detail above and the peers confirm proposing two corresponding requirements (see below, sec. F, A 3. and A 5.).

Programme design / integration of closely interlinked degree programmes

The peers take note of the HEIs argument that the programme development as well as programme names and professional settings are strictly regulated through ministerial provisions and thus beyond the influence of the HEIs. Nevertheless, with regard to the assignment and coordination of (personnel and physical) resources and the coherence of the degree programmes, the expert panel encourages the College to promote the idea of an integration of closely aligned programmes into one with specialized tracks on the regional and national levels. Supporting this suggestion, the panel proposes a related recommendation (see below, sec. F, E 4.).

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Respective chapter of the SAR
- Respective "Professional Training Program", Appendices B1 B4
- Curriculum of each degree programme, Appendices C1 C4
- Module Handbook of each degree programme, Appendices B5 B8
- Regulations Learning and Examination System, Appendix F
- List of Internship Base Contracts for each degree programme, Appendices P1 P4
- Audit discussions

Preliminary assessment and analysis of the peers:

The four undergraduate programmes are "modularized" insofar that they generally consist of self-contained and thematically consistent courses. Technically speaking, however, courses, but not "modules", are the referenced learning/teaching unit of the curricula. The term "module" is not used in its usual meaning, but rather as a collective term for thematically interlinked courses, structuring the various components of the curriculum, such as "Mathematics & Physics Fundamentals", "Computer Science Fundamentals", "Circuit Fundamentals", "Control Engineering Fundamentals" or "Engineering Practice" in case of the <u>Bachelor's programme Electrical Engineering and Automation</u>. The courses allocated to each "module" or thematically oriented course catalogue may span over several semesters. The peers note that this unusual understanding of the term "module" does have the positive side effect of giving a very clear idea of the curricular structure of the <u>study programmes</u>. The downside is that the "module" handbooks" comprise "module" descriptions incorporating the relevant information of all related courses, which negatively affects their transparency and readability (see sec. 5.1).

Apart from the above-mentioned reservations concerning the alignment of programme name, learning objectives and curriculum of the <u>Bachelor's programmes</u> under consideration (see above sec. 1.3), the composition, volume and sequence of the courses appears to be generally plausible. However, the expert panel cautions that this assessment explicitly respects the application-oriented design of the curricula. Hands-on competencies and readily available professional qualifications are the prime focus of the programmes, which the peers acknowledge. This includes from the peers' point of view a generally limited theoretical immersion in the professional major courses, which is acceptable and even adequate in terms of the practical usability of the professional knowledge and skills for engineering assignments.

In the previous section, the peers noted that – apart from the general educational courses the programmes do have in common – the responsible colleges make reasonable use of identical courses across the programmes. With respect to the module and course titles, the size of the courses and the presumptive teaching staff and course coordinators, this is evident in the <u>Software Engineering</u> and <u>Internet of Things Engineering programmes</u> and at least partly in the <u>Electrical Engineering</u> and <u>Communications Engineering programmes</u>. Because of the similarities of <u>the degree programmes</u> – in particular the <u>communications-related programmes</u> –, the peers assume that a thorough revision of the curriculum design (see sec. 1.3) might disclose further options for an efficient use of (physical and personnel) resources. Moreover, they received the impression that the coordination of the modules and courses across the study programmes and responsible departments or colleges could

be improved. The expert panel therefore addresses a respective suggestion in order to promote the teaching results and better achieve the intended learning outcomes. In conjunction with a general review of the curricula (see sec. 1.3), the reorganisation of thematically connected modules and courses in closely interlinked study programmes might also result in an optimization of the (material and especially personnel) resources.

One of the often-reiterated educational objectives is to enhance the students' ability to perform in their respective profession in an international English speaking work environment. In this respect, it is principally laudable that all majors under review include English language courses with a volume of altogether 24 ECTS. This being a comparatively large share of language training in ordinary Engineering programmes, the peers nevertheless underline its importance, the more so as the graduates are trained primarily for a professional career in the industry. Extra-curricular activities and optional language courses reported by the students could be considered an additional instrument to foster the students' English proficiency. Moreover, coordinators declare recommending students to use and read English technical literature. Following that, the panel was astonished to see that the actual English-speaking competency of the students appears to be poor. The students explicitly complain about the overall poor English proficiency, in particular in terms of the command of professional English. Reportedly so far no professional courses (mandatory or elective) taught in English are included in the curricula of the Bachelor's programmes. The peers therefore suggest successively developing and integrating at least some professional courses in English language (in addition to the mandatory College English courses).

The peers appreciate that the students are allowed principally to change the respective major or school while the awarded credits and grades could be recognised. This seems to be most convenient after the first study year or in the early study periods respectively. Although the opportunity of leaving the college or school for continuing the study in China or abroad exists (which, in the latter case, is even supported by certain grants), only few students apparently take the chance. Unlike the case of transfer to other Colleges or Schools within China¹⁰, the peers were unable to identify rules governing the transfer to universities abroad (and the recognition of competencies acquired there). Putting in place and implementing such rules (in accordance with the Lisbon Convention)¹¹ is therefore commendable in their opinion.

¹⁰ See chap. VII of the "Student Management Regulations of Yitong College of Chongqing University of Posts and Telecommunications", Yitong College (2017) No. 81; Appendix F

¹¹ Cf. Sec. III, Art. III.1 – III.5; available on the internet: <u>https://www.coe.int/de/web/conventions/full-list/-/conventions/rms/090000168007f2c7</u> (Download: 02.05.2019)

Criterion 2.2 Work load and credits

Evidence:

- Respective chapter of the SAR
- Respective "Professional Training Program", Appendices B1 B4
- Curriculum of each degree programme, Appendices C1 C4
- Module Handbook of each degree programme, Appendices B5 B8
- Audit discussions

Preliminary assessment and analysis of the peers:

In the first place, a Chinese credit point system is in use according in which 16 contact hours (with 45 minutes per hour) correspond to one Chinese credit point. As to general education courses, 32 contact hours correspond to one Chinese credit point. Accordingly, the Chinese credit point system refers to the attendance time only.

The College has converted this system into the ECTS, thereby including the students' selfstudy time for each module. In principle, the results look reasonable. Professional courses are attributed 3 to 8 ECTS points with few exceptions of 1 to 2 ECTS courses, mostly concerning practical teaching units (experiments, projects and design courses). The workload per semester ranges between 27 and 33 ECTS points. In principle, the peers consider this workload bearable, and the students' comments do not give any hints to the contrary. It is positively valued that the course descriptions in the respective Module Handbook contain accurate information about the workload and credit volume of the different teaching/learning formats within a course (lectures, exercises, homework, experiments, exam preparation etc.). Furthermore, the experts acknowledge that the various types of internships included in the curriculum are awarded, on average, a realistic share of ECTS points (with the Graduation Internship taking the bulk of it (16 ECTS points)).

Although the conversion of Chinese credits into ECTS credits appears to be essentially reasonable, information about the ECTS and, in particular, its consideration of both students' attendance time and self-study time, is scarce. In the peers' view, the students have shown poorly informed about the difference between the two credit point systems and, especially, the core concern of the ECTS. The peer panel therefore suggests undertaking further efforts to get the students used to the ECTS as a workload-centred credit point system.

In order to raise the overall awareness of this issue, a systematic monitoring and analysis of the workload on a regular basis is considered necessary. The results could then be used as an instrument to correct the credit point allocation or the course contents in case of significant discrepancies between the calculated and the actual workload of students. Hence, the peers stipulate establishing a respective mechanism.

Criterion 2.3 Teaching methodology

Evidence:

- Respective chapter of the SAR
- Module Handbook of each degree programme, Appendices B5 B8
- Results of Teacher Evaluation, Appendix M
- Award Sample Lists of Teachers and Students, Appendices O1 O4
- Audit discussions

Preliminary assessment and analysis of the peers:

The module handbooks provide a proper overview of the "type of teaching" applied in each course. A range of different teaching methods is in use. According to the SAR fundamental courses are mostly taught in the form of large classes (about 100 students), while Engineering fundamental courses are usually taught in the form of medium classes (about 60 students) and some specialized courses in even smaller classes (about 30 students). Most of the professional modules (more precisely: courses within modules) include theoretical knowledge as well as experiments. The auditors understood that for the practical parts ("experimental classes") the students are subdivided into small groups of 3-4 students, which is appropriate for laboratory work from their point of view.

The auditors welcome the distinction of self-study and contact time in the module handbook. They are generally convinced that the available time gives students sufficient opportunity to carry out independent academic work in an application-oriented manner.

Programme coordinators, members of the teaching staff and the SAR all strongly insisted that teaching methods and the improvement of individual teaching competences are core issues of the College's commitment to the quality of teaching and learning. The evaluation results regarding the teaching performance (student scores) confirm an overall excellent teaching record. However, constantly high scores of more than 90 points (from 100) in the students' evaluation at the same time qualify the assessment as hardly tangible/reliable. Constant commitment of the lecturers in continuous professional development (CDP) activities such as participation in conferences, research projects, publications, patents etc. (Appendices D1 - D4), do certainly contribute to the teaching quality (although not always at a high-profile level by international standards). In this regard, the long list of teaching awards annexed to the SAR must be highlighted, since they attest to the College's efforts

in further developing the teaching quality. In the same vein, the correspondent list of student achievements confirms that the College successfully provides incentives for the students' commitment in specified project and research activities.

It is found conducive to achieving the intended learning outcomes that the College uses its "educational information management platform" to support both teachers and students in the management and implementation of the teaching and learning processes. On request, the students underline these benefits of the information management system. According to the SAR (p. 79), the "information technology and network platform [...] can facilitate teachers to change teaching concepts and educational concepts, prompt them to update teaching content in a timely manner, and continuously improve teaching methods, promote the relationship between teachers and students, and improve students' self-directed learning". This is highly welcomed by the peers.

Criterion 2.4 Support and assistance

Evidence:

- Respective chapter of the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

It is appreciable that a number of different advisory offices are in place. For administrative routine support of undergraduate students, the *Student Affairs Division* is in charge of guiding and supporting students in all matters of general information, study organization and self-management. Furthermore, the *Student Counsellor system* is composed of full-time undergraduate counselors, who are responsible for the guidance and psychological counseling of students. Additionally, according to the SAR, every class has a *class tutor*, who normally is a head teacher and responsible for providing students with professional advice and guidance. *Academic tutors*, in turn, are installed in order to guide students to better adapt to the university's learning and life, and understand the professional training characteristics and requirements. They are also expected "to facilitate exchanges between teachers and students, to guide students to master scientific learning methods and skills [...] and to listen to students' opinions and suggestions, (and) answer students' questions about their studies, majors, occupations, and life" (SAR, p. 54).

The auditors recognize that the College has established appropriate processes and responsibilities to effectively advice and counsel students. The students also confirmed that information for the study programmes are available on the internet and that every student receives a complete set of information for the respective degree programme after admission and enrolment. Even though the general webpage is accessible in Chinese language only, the peers are convinced that sufficient information is available and that the subject-specific and general advisory methods are suitable to help students achieve the learning outcomes and complete their degree within the normal period of study.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2:

The peers consider the requirements of the above criterion as *partly not fulfilled*. This applies with respect to a learner-centred credit point system in general and the application of the ECTS in particular.

Application of the term "module" vs. "course"

The peer panel takes note of the unfamiliar usage of the term "module" in the design of the degree programmes. It stresses the benefit the terminology provides in understanding the structure of the curricula, but also highlights the accompanying deficiencies regarding the rather non-transparent course-related information (see below sec. 5.1 in connection with sec. F, E 7.).

Application- and profession-oriented structure and curricula of the programmes

The peers again point out that the programmes and curricula under review are significantly marked by the students' application- and profession-related competencies. Surely, this is a signature element of the programme design and obviously a key factor of the HEI's educational philosophy. Consequently, theoretical knowledge is predominantly introduced as the "foundation for practical application and engineering practice" as the programme coordinators rightfully put it. However, there always must be a careful balance between theoretical knowledge and practical engineering skills, even if the application-oriented and practical aspects are is the major objective.

Credit point system and workload assessment

The peers underline the importance of the consistent use of a learner-centred credit point system such as the ECTS and its inherent focus on realistically calculating the student work-load of combined attendance and self-study time. This requires students and teachers sufficiently informed about the characteristics and functionality of the credit point system. The peers noted serious shortcomings in this respect on both sides. Hence, they consider it necessary to develop and implement a process of systematically monitoring the student's workload in connection with the respective credit point allocation (see below, sec. F, A 4.).

Coordination of colleges and those responsible for the degree programmes

The peer panel highlights the relevance of an adequate coordination of the institutions offering the programmes and those persons responsible for the programmes (including the teaching staff) for the ultimate achievement of the intended learning outcomes. As there appears to be room for improvement, the peers recommend undertaking further efforts in this direction (see below, sec. F, E 2).

In particular, thematically interlinked modules across the different programmes could be better aligned with each other. Apart from the general suggestion to improve the coordination of the programmes, the panel considers this recommended (see below, sec. F, E 3.).

English proficiency of students

The peers welcome the efforts of the College to steadily improve the English language skills of the students. In order to support these efforts, they confirm a related recommendation initially framed for the respective issue (see below, sec. F, E 5.).

Rules for recognition of competencies gained at other HEIs

The expert panel is convinced that the recognition of academic achievements of students acquired at other HEIs work well on a bilateral basis of mutual agreements. However, the peers also note that apparently no binding rules for the recognition of such skills and competences are in place yet. Hence, the panel proposes implementing such general rules in the medium term (see below, sec. F, E 8.).

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Relevant chapter of the SAR
- Module Handbook of each degree programme, Appendices B5 B8
- Examination System and Teaching Quality Assurance, Appendix E
- Learning and Examination System, Appendix F
- Student Transcript Samples, Appendices N1 –N4
- Audit discussions

Preliminary assessment and analysis of the peers:

The peers take note that there are regulations in place defining the rules and conditions of assessment in undergraduate degree programmes at the College of Mobile Telecommunications, Chongqing University of Posts and Telecom (see Appendices E and F). According to these rules and the remarks of programme coordinators and teaching staff members, the methods of examination include written examination, oral examination, reports, presentations etc. A summative information of the assessment methods can be found in the relevant module/course descriptions. Reportedly, final examinations are usually conducted during two examination weeks at the end of each semester after another two weeks of preparation time and including an appropriate pause between consecutive exams. The teachers could individually arrange exams of elective courses. In any case, final examinations and forms of a continuous assessment (assignments, exercises, and homework) combine to a considerably high examination burden. However, both the students and the lecturers praise this examination system as an instrument to effectively monitor the individual learning progress and prepare the final examination.

It favourably sheds light on the quality assurance system that according to the SAR the examination results are analysed in order to support students who fail to pass certain exams and to improve their learning outcomes. Notable in this respect is that retaking examinations is possible in the same semester, thus preventing an unnecessary prolongation of the study duration. It seems not least due to the continuous monitoring of the students' learning progress that resitting an examination is the overall rare exception. In fact, the examination system is designed in such manner that students normally do not fail finally. At worst, a student may be downgraded to repeating a course until he passes the exam, which, in turn, is explanatory of the remarkably high graduation rate.

While theoretical courses generally require written examinations, mostly in the form of written tests, experimental units are regularly completed with a report and projects/design works might require students to orally present their solutions. In sum, the audit team concludes that the examination system as such and the examination forms in particular aim at supporting students to achieve the intended learning outcomes.

Students shall conduct a 12-week *Bachelor Thesis* in the eighth semester under the guidance of College supervisors. Particularly regarding off-campus Bachelor Theses, they are required to keep close contact with their supervisors on campus. As the SAR states and teachers confirm, graduating students report the thesis progress in writing at least once every week to make sure that the progress is in accord with the thesis design and comparable to that of other graduating students in the respective major. By the same account, thesis topics are usually proposed by the supervising teachers and in case of off-campus projects mutually agreed upon by the College supervisor and the responsible company tutor. It is plausible that thesis topics might directly evolve out of the graduation practice, in which students have to work on engineering assignments related to their major.

With their thesis work, students are required to prove that they are able to solve an engineering task of an adequate level of difficulty independently and within a given timeframe. Besides the written work, the *Bachelor Thesis* entails an oral defence of the results. From the peers' perspective, the rules and requirements for the *Bachelor Thesis* and their implementation are supportive in achieving each programme's learning objectives. Samples of Bachelor Theses provided for inspection during the onsite-visit in general confirmed this impression. Regarding the topics and proposed engineering solutions, they also clearly reflect the application-orientation of the <u>Bachelor's programmes under review</u>.

As the peer panel learns, the College regulations allow for a graduation with or without a degree certificate. Completing a Bachelor thesis, according to that, is prerequisite for the degree-earning certificate. By contrast, students failing the graduation requirements of the College may be qualified for the award of a certificate of completion. The peers take note of these special provisions¹². From their perspective, the award of the degree certificate under the condition of completing a Bachelor thesis meets the relevant accreditation criterion for study programmes at the Bachelor's level.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 3:

The peers conclude that the examination system *fully meets the relevant requirements*.

4. Resources

Criterion 4.1 Staff

Evidence:

- Relevant chapter of the SAR
- Staff handbook for each degree programme, Appendices A1 A5
- List of "Staff achievements", Appendices D1 D4
- Clarification concerning the expertise and workload of the teaching staff, Appendices 3 – 3-1-4 of the Additional Documentation

¹² Cf. chap. X of the "Student Management Regulations of Yitong College of Chongqing University of Posts and Telecommunications", Yitong College (2017) No. 81; Appendix F.

• Audit discussions

Preliminary assessment and analysis of the peers:

The peers note that, according to additional information given after the onsite-visit, the total number of teachers in the four programs is 269. As the SAR states, altogether 36 fulltime teachers are engaged in the Electrical Engineering and Automation specialty, 50 in the Communication Engineering Bachelor's programme, 40 in the Software Engineering major and, lastly, 26 in the Internet of Things Engineering specialty. Additionally, a considerable share of the overall teaching staff are part-time lecturers, primarily employees from the Chongqing University of Posts and Telecom as one of the two co-sponsors of the College of Mobile Telecommunications. The academic status and school/department position depend on the teaching and research record as well as the professional background experience and ranks professors, assistant professors, lecturers, and teaching assistants. The staff handbook of each major in detail informs about the academic and professional qualifications of the respective teaching staff. Based on the available information, including the additional documents provided after the onsite-visit, the overall teaching capacity of the responsible school/departments is considered sufficient to operate the undergraduate programmes. The student-teacher ratio ranges from 19:1 in the Electrical Engineering and Automation major to 14:1 in the Internet of Things Engineering major, which appears to be very good in relation to the generally large intake numbers. With approximately 23:1 it is comparatively unfavourable in the Bachelor's programmes Communications Engineering and Software Engineering, which, in turn, have far higher numbers of enrolled students (roughly 2.900 and 1500 respectively). The regular workload of teaching staff members comprising the teaching hours and – except for the teaching assistants – a certain share of research hours is 192 hours per semester, which appears to be acceptable. The peers assume that the workload of professors from CUPT includes their teaching obligations at the home university, since – as they learnt from the on-site discussions – the College has to pay for their services a contracted sum of money (actually 10% of the incoming student fees).

Along with that, the staff handbooks leave the impression that the academic and professional qualification of the teaching staff is overall appropriate and fits the individual teachers teaching assignments in the respective programme. However, the available information also clearly demonstrates that the academic qualification of the Colleges' full-time staff virtually never exceeds the Master's degree. All professors and associate professors with a PhD degree are mandated part-time professors of the University of Posts and Telecom, but not salaried staff of the College of Mobile Telecommunications. The expert panel understands that there are close ties between the two institutions in that the Chongqing University of Posts and Telecom figures as a co-sponsor of the College besides Chongqing Jianhong Chuangjia Real Estate Development Co., Ltd. At the same time however, the College representatives stress that it is independent of the University having its own legal status as a private university in contrast to the university's status as a public HEI. Having yet no professors and lecturers with a PhD degree as regular (full-time) staff members is in the opinion of the peers a serious deficiency. Although many teachers of the College undeniably invest significant efforts in research activities of some kind, the PhD degree of professors and lecturers is indispensable to impart a methodologically structured approach to science and research to students. The overall quality of any teaching and research activities in the schools and departments of the colleges essentially depend on this scientific attitude and research competence. Likewise do, in the last instance, the teaching, guiding and supervising responsibilities of the teaching staff in the Bachelor's programmes under review. The expert panel does not doubt that the PhDs of Chongqing University of Posts and Telecom resume a fixed share of teaching obligations in the programmes. Apparently, the co-sponsoring CUPT and Chongqing Jianhong Chuangjia Real Estate Development Co., Ltd. have arranged for this reliably. Yet it remains unclear, to which extent, and unless proven wrong the peer panel assumes that these (associate professors) are in the first instance belonging to the teaching staff at their home university. In particular, they are not in charge or holding any official function of the programmes – as far as can be judged from the available information. Consequently, due to the overall absence of PhD holders in the degree programmes under review, the expert panel considers at least one full professor with a PhD in charge for each programme a necessity. In order to achieve the quality objectives of each programme and to raise the basic research capabilities of the College, this might also be conducive to a recruiting and professional development strategy aimed at a more balanced qualification structure of the teaching staff. The (associate) professors of the University of Posts and Telecom may serve as a good starting point, particularly as – according to the clarification of the College – the university "is responsible for guiding and supervising education, teaching and management of (the) College of Mobile Telecommunications".

Criterion 4.2 Staff development

Evidence:

- Relevant chapter of the SAR
- Clarification concerning the advancement and career options of the teaching staff, Appendices 3-2 to 3-8 of the Additional Documentation
- Audit discussions

Preliminary assessment and analysis of the peers:

The peers learnt from the SAR that the College provides a one-month preparatory educational training for newly appointed young staff. According to the SAR, the College has also implemented the "Young Teacher Mentoring Pilot Scheme" allocating mentors to young staff who are joining the University without advanced professional technical positions. In addition, it encourages young teachers either to go one year to a company for practical experience or abroad for international teaching and research experience. Thus, the College convincingly supports the professional advancement of the teaching staff, which depends on their teaching and research record as well as their international study experience. Various financial incentives and numerous awards for excellent teaching attest to this observation. It may be highlighted here that lecturers are also prompted to carry out education and teaching research, as it can be presumed that the results will be transferred to the teaching practise and thus contribute to its continuous improvement.

In general, the auditors welcome the presented opportunities for the further development of subject-relevant knowledge and teaching skills. The only point to raise a flag however, is, as argued above, that the already established instruments for the promotion of PhD candidates so far did not have any tangible impact.

During the audit-visit, the auditors observe that the English proficiency not only of the students (see sec. 2.1), but also of the teaching staff could be improved. Therefore, they advise the college to foster the English teaching competencies of the teaching staff through adequate means.

Criterion 4.3 Funds and equipment

Evidence:

- Relevant chapter of the SAR
- Information about the relationship between the College and CUPT; Appendices 2-1 to 2-4 of the Additional Documentation
- Information about Equipment Investment for each degree programme, Appendices G1 – G4
- Laboratory information for each degree programme, Appendices H1 H4
- Audit discussions

Preliminary assessment and analysis of the peers:

Concerning the physical and financial resources available for the degree programmes, the expert panel takes note of the HEI's clarification of organizational and legal structure of the

Chongqing College of Mobile Telecommunications. According to that, the college is an independent private HEI, co-sponsored – as already mentioned – by Chongqing University of Posts and Telecom and Chongqing Jianhong Chuangjia Real Estate Development Co., Ltd. As the additional information reads, "Independent colleges in China are institutions of higher education run by Chinese public universities in cooperation with social organizations other than state institutions, using non-state financial funds to implement undergraduate education." This seems to be contradicted by the fact that both co-sponsors of the college are by law and contract given specific responsibilities with Chongging University of Posts and Telecommunications in charge "for guiding and supervising education, teaching and management of (the) College of Mobile Telecommunications".¹³ It would be difficult to understand how Chongging University of Posts and Telecommunications should bear its responsibility without the competence to interfere in strategic decisions of the college such as, for instance, the establishment or discontinuation of degree programmes. In fact, the peers learn that three representatives of the University are members of the Board of Directors as decision-making body for the college affairs.¹⁴ Thus, the audit panel concludes that because of the actual influence of the university the (formal) independency of the college appears to be in fact somewhat flawed. However, from the peers' perspective this could even turn out to be a benefit, since it requires a strong commitment of CUPT. As mentioned earlier, the ultimate responsibility for the teaching process could be reflected in a correspondent commitment in the teaching process (particularly of PhD holding professors and associate professors; see above sec. 4.1).

Regarding the financial basis, the college is essentially reliant on study fees as well as the financial resources provided by Chongqing Jianhong Chuangjia Real Estate Development Co., Ltd. as co-sponsor. According to the explanation note of the College, the company "is responsible for providing the conditions and facilities required for the school and responsible for the funding of school construction and development".¹⁵ The good impression of the lab equipment and generally of the campus infrastructure convinced the peers of the apparently solid financial basis of the college and the degree programmes. Moreover, the regulation of mutual rights and obligations between CUPT and Chongqing Jianhong Chuangjia Real Estate Development Co., Ltd. in the "Cooperative School-running Contract" leads the expert panel to the conclusion that the material and financial resource base rests on a meaningful long-term arrangement between two significant academic and industry

¹³ See Appendix 2-1 of the Additional Information provided after the onsite-visit and Appendix 2-2, chap. VII Art. 49.

¹⁴ Ibid.

¹⁵ Ibid.

partners. It is welcomed that this partnership apparently also includes an overall responsibility of the partners for the quality development of the College and its programmes. Irrespective of the ultimate meaning of the "autonomy" of the College of Mobile Telecommunications, its legal ties to CUPT in the eyes of the peers are per se contributing to the quality assurance of the programme and may be further used for their improvement.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 4:

The peers consider the resources for running the programmes *not sufficient*. In particular, they conclude that the present composition and qualification of the teaching staff is not convincing.

Teaching staff

The panel is thankful for the additional remarks on the cooperation between the College of Mobile Telecommunications and Chongqing University of Posts and Telecom. It is particularly welcomed that the peers' previous assumption a close cooperation between the College and the CUPT already exists and is implemented on a contractual basis. This should facilitate assigning a leading position in each programme to at least one full professor with a PhD degree in the respective field of expertise. From the peers' perspective, this step is indispensable for the further development of the teaching staff's professional qualification (see below, sec. F, A 1.). In connection with this and as a medium-term objective, the panel strongly endorses the build-up of teachers with academic qualifications above the Master's degree (see below, sec. F, E 1.).

English language skills of the teaching personnel

The peers appreciate the indications of the College about the already existing supporting structure for the further qualification of the teaching staff. However, they feel that further steps to improve the English proficiency of the staff should be undertaken (see below, sec. F, E 6.).

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Module Handbook of each degree programme, Appendices B5 B8
- Audit discussions

Preliminary assessment and analysis of the peers:

The audit team generally concludes that the module/course descriptions adequately reflect the respective curriculum and contain meaningful information about the individual modules. In particular, the descriptions provide comprehensive information about the different types of learning and teaching, the methods of assessment used in each module/course, the workload calculation and credit point attribution. Most of them also clearly indicate which knowledge, skills and competencies students are supposed to achieve in order to reach the intended qualification profile. Furthermore, it seems that the students do have access to the "Module Handbooks" on the webpages of the College, even in English language. Although peers are unable to verify this, they do not doubt the respective confirmation of the students.

Because of the different understanding of the term "module", as discussed earlier (see sec. 2.1), the presentation of the module/course descriptions appears very dense and comprehensive and thus less transparent. Since "modules" in the meaning of the College refers to a cluster of subject-related courses (the proper reference units), all cluster-related "courses" are presented consecutively and at once under the heading of the "module". This makes it difficult to identify specific course-related information. On the other hand, the students seem to be used to this kind of module/course information and did not voice any concern about it. By contrast, they generally laud the informative and readily accessible websites of the College. Nevertheless, the panel principally suggests adapting the module handbooks in such manner that the descriptions more transparently convey the course-related information, as the courses are the prime learning unit.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Diploma Supplement for each degree programme, Appendices K1 K4
- Student Transcript Samples, Appendices N1 N4

Preliminary assessment and analysis of the peers:

English language Diploma Supplements for the Bachelor's degree programmes have been provided. The peers confirm that the Diploma Supplements give interested parties insight into the structure, content and level of the successfully completed degree and, furthermore, contains some basic information about the national system of higher education. Samples of the Transcript of Records document the individual performance of the graduate. Section 4.5 of the Diploma Supplement also provides statistical data in accordance with the ECTS User's Guide to assist in interpreting the individual overall grade.

Criterion 5.3 Relevant rules

Evidence:

- Examination System and Teaching Quality Assurance, Appendix E
- Learning and Examination System, Appendix F, consisting of:
- Student management regulations of College of Mobile Telecommunications, Chongqing University of Posts and Telecom.
- Regulations on curriculum examination management of College of Mobile Telecommunications, Chongqing University of Posts and Telecom (Trial).
- Rules for calculating students' scores of daily performance of College of Mobile Telecommunications, Chongqing University of Posts and Telecom.
- Rules for supplemental Exam, retaking course and delayed exam of College of Mobile Telecommunications, Chongqing University of Posts and Telecom.
- Procedures for handling disciplinary violations in examinations of College of Mobile Telecommunications, Chongqing University of Posts and Telecom.
- Opinions on the implementation of graduation project (Thesis) for undergraduate students of College of Mobile Telecommunications, Chongqing University of Posts and Telecom.
- Management of graduation practice of College of Mobile Telecommunications, Chongqing University of Posts and Telecom.
- Specifications for paper-examination of College of Mobile Telecommunications, Chongqing University of Posts and Telecom.
- Implementation details of bachelor's degree awarding of College of Mobile Telecommunications, Chongqing University of Posts and Telecom.

Preliminary assessment and analysis of the peers:

The peers note that all aspects of admission, examination, progress, probation and disqualification and grading policy are addressed in the relevant study and exam regulations and, reportedly, outlined on the College webpages. The College declares that all these regulations are fully implemented in Chinese laws. Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 5:

In general, the expert panel considers the requirements concerning the transparency and documentation of the <u>Bachelor's degree programmes</u> *fulfilled satisfactorily*.

Module handbook

On the reasons discussed in their preliminary assessment, the peers recommend to indicate more transparently the course-related information in the module handbooks. While they are principally satisfied with the module/course descriptions, they nevertheless recommend improving them accordingly in the course of future revisions (see below, sec. F, E 7.).

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Relevant chapter of the SAR
- Evaluation Form, Appendix I
- Teacher Evaluation, Appendix M
- Graduate Survey, Appendix S
- Graduate Employment Quality Report (2014-2017), Appendix T
- Employment of graduates, Appendix 4-1 of the Additional Documentation
- Employment Statistics, Appendix 4-1 of the Additional Documentation
- Audit discussions

Preliminary assessment and analysis of the peers:

The auditors see that the College has defined and implemented a set of quality assurance measures, feedback cycles and follow-up processes. Thus, the teaching process is subject to the scrutiny of student evaluations and graduates' surveys. Reportedly, student statistics such as admission and graduation rates as well as examination scores are analysed and results used to remedy shortcomings of the degree programmes and to provide adequate support for students. Additionally, the peers received the impression that the college undertakes significant efforts to get feedback from employers and cooperating companies

regarding the demands of the industry and new technological developments, which industry representatives explicitly confirm. Principles of the recruitment strategy, as detailed in chapter 4.2, along with a string of incentives to improving the individual teaching capabilities are further elements of a common understanding of quality.

Concerning the evaluation of teaching, the College essentially relies on a three-pillar-system. The first level is a routine-based course evaluation by students. On the second, intermedium level, regular collegial supervision is set as an internal evaluation scheme, which likewise aims at collectively refining the individual teaching method. Finally, the College conducts large-scale graduate and employment surveys in order to gather information about the employment situation of the graduates and the feedback of the employers. In terms of closing feedback-cycles, it is essential that the results of these surveys are systematically summarized and reflected in reports published annually on the college's website. The "Graduate Employment Quality Reports (2014 – 2017)" enclosed in the SAR provide ample evidence for this finding and, in particular, include a discussion of possible follow-up strategies each. Targeted measures of the College to better prepare students of the needs of industry and to foster the seamless transfer between university and company may be exemplarily cited here ("dual system education model").¹⁶ The overall high employment rate and satisfaction of the companies with the gualification of the graduates documented in the reports as well as in the provided employment statistics, is impressive. From the perspective of the peers, these results generally reassure the educational strategy primarily aimed at a ready-to-use, practise-oriented engineering qualification profile.

The peers conclude that the quality cycles in place for <u>the Bachelor's degree programmes</u> are principally working well. Particularly, they have the impression that the results of the different quality assurance instruments and their follow up are benefiting the quality development of the programmes.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 6:

The peers conclude that the quality assurance measures in practice for the Bachelor's programmes under review *fully meet the requirements*.

¹⁶ Cf. for instance "Graduate Employment Quality Report 2014 – 2017" (referring to Report 2017), pp. 103 – 107.

D Additional Documents

No additional documents needed.
E Comment of the Higher Education Institution (10.06.2019)

The institution provided a detailed statement, which the peers take note of in their final assessment (at the end of each criterion in the previous chapters of this report).

F Summary: Peer recommendations (16.06.2019)

Taking into account the additional information and the comments given by the College of Mobile Telecommunications, the peers summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Electrical Engi- neering and Auto- mation	With requirements for one year	EUR-ACE [®] Upon fulfilment of the requirements	30.09.2024
Ba Communication Engineering	With requirements for one year	EUR-ACE [®] Upon fulfilment of the requirements	30.09.2024
Ba Software Engi- neering	With requirements for one year	Euro-Inf® Upon fulfilment of the requirements	30.09.2024
Ba Internet of Things Engineering	With requirements for one year	Euro-Inf [®] Upon fulfilment of the requirements	30.09.2024

Requirements

For all degree programmes

- A 1. (ASIIN 4.1) It is necessary to provide evidence that at least one full professor with a PhD degree in the related disciplinary fields is in charge for each programme in order to responsibly define and reliably achieve the learning outcomes in the focus of the correspondent programme.
- A 2. (ASIIN 1.1) Draft the educational objectives / learning outcomes on the programme level more precisely with a specific focus on the differentiation between the programmes and their strong orientation towards applications. Make these objectives accessible for all relevant stakeholders and ensure that the stakeholders can refer to them. Include them also into the Diploma Supplement.
- A 3. (ASIIN 1.2, 1.3) Make sure and provide evidence that the name of the degree programme, its intended learning outcomes and its content correspond with each other.

A 4. (ASIIN 2.2) Establish a process to systematically monitor the student workload in order to adapt the credit point allocation or the course design in case of significant discrepancies.

For the Bachelor's degree programme Software Engineering

A 5. (ASIIN 1.3) Strengthen the Software Engineering competences of students in the strict sense by integrating core topical courses into the curriculum.

Recommendations

For all degree programmes

- E 1. (ASIIN 4.1) It is highly recommended recruiting more teaching staff with higher academic qualifications (above Master degree) and advanced research records.
- E 2. (ASIIN 2.1) It is recommended to improve the coordination between the responsible colleges and programme coordinators in order to promote the teaching results and better achieve the intended learning outcomes.
- E 3. (ASIIN 2.1) It is recommended to reorganize thematically interlinked modules in the degree programmes (for instance, Circuit Fundamentals in EEA and Engineering Fundamentals in CE) in order to achieve a better coordination between the degree programmes and optimize the investment of resources (teaching staff in particular).
- E 4. (ASIIN 1.3) It is recommended to promote the idea of merging the programmes into one with specialised tracks in the related engineering fields at the regional and national levels.
- E 5. (ASIIN 2.1) It is recommended to successively develop and integrate at least some professional courses given in English language in order to strengthen the students' command of professional English.
- E 6. (ASIIN 4.2) It is recommended to foster the English teaching competences of the teaching staff.
- E 7. (ASIIN 5.1) It is recommended to adapt the module handbooks in such manner that the descriptions more transparently convey the course-related information, as the courses are the prime learning unit.
- E 8. (ASIIN 2.1) It is recommended to put in place and implement rules for the recognition of knowledge, skills or competences acquired at other universities (at home and abroad).

G Comment of the Technical Committees

Technical Committee 02 – Electrical Engineering and information Technology (17.06.2019)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee intensively discusses the procedure. As the peers do, it considers the issue of the qualification of the teaching staff a decisive point with respect to the quality and further development of the degree programmes. It is of major concern that nearly none of the salaried staff of the College of Mobile Telecommunications has academic merits above the Master's degree. On the other hand, the Technical Committee acknowledges that there are many experienced lecturers among the teaching staff with close connections to the professional world and intimate knowledge of its demands and technical developments. The programmes are mostly running for many years and well received by the companies. It goes without doubt that they do have curricular weaknesses addressed in related requirements and recommendations. Yet these are comparable to similar programmes across countries and cultures, and there is little evidence that they could be traced directly to the lack of professional competence of the responsible staff. However, overcoming the structural deficits of the programmes and ensuring their quality improvement would need the guidance and incentives from research-experienced personnel in the related disciplinary fields and, in the medium and long run, a constant increase in the qualification base of the teaching staff.

The Technical Committee concludes that having such personnel in charge of the programmes will be conducive to the development of the degree programmes in the above direction, thus confirming the assessment of the peers. In order to clarify this, the Technical Committee proposes amending the related requirement 1.

Apart from that, the Technical Committee follows the assessment and recommended resolution of the peers without further modifications.

Assessment and analysis for the award of the EUR-ACE[®] Label:

Because of the staff-related concerns and the curricular shortcomings, the Technical Committee concludes that a final assessment of whether the engineering-specific learning outcomes of its Subject-Specific Criteria are fully met in the <u>Bachelor's programmes Electrical</u> <u>Engineering and Automation</u> and <u>Communication Engineering</u> is dependent upon of the fulfilment of the curriculum-related requirements. It therefore decides postponing the award of the label until then.

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Electrical Engi- neering and Auto- mation	With requirements for one year	EUR-ACE [®] Upon fulfilment of the requirements	30.09.2024
Ba Communication Engineering	With requirements for one year	EUR-ACE [®] Upon fulfilment of the requirements	30.09.2024
Ba Software Engi- neering	With requirements for one year	Euro-Inf® Upon fulfilment of the requirements	30.09.2024
Ba Internet of Things Engineering	With requirements for one year	Euro-Inf [®] Upon fulfilment of the requirements	30.09.2024

The Technical Committee recommends the award of the seals as follows:

Proposed amendment in requirement 1:

A 1. (ASIIN 4.1) It is necessary to provide evidence that at least one full professor with a PhD degree or comparable research experience in the related disciplinary fields is in charge for each programme in order to responsibly define and reliably achieve the learning outcomes in the focus of the correspondent programme.

Technical Committee 04 – Informatics/Computer Science (Circulation procedure in June 2019)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee considers the staff resources and, in particular, the overall qualification of the staff as questionable and wonders, whether the programmes could be accredited given the actual qualification level of most of the teaching staff, including the programme coordinators. The Committee learns that, until very recently in the Chinese system of higher education, teaching staff with a discipline-related PhD could rarely be found in the HEIs. Today, this has been changed considerably but still turns out to be the case in this new type of Higher Education Institutions. The Technical Committee does not dispute the enthusiasm and vigor of the teaching staff in delivering high-quality and labor market-oriented degree programmes. However, the Committee concludes that it takes at least one full professor with a PhD and relevant research competence in the disciplinary field of each programme to keep the programme development on track with the demands of new scientific results and technical developments. Thus, the Committee stresses the necessity of requirement 1 in combination with recommendation 1. Furthermore, it agrees with the assessment of the peers without changes.

Assessment and analysis for the award of the Euro-Inf[®] Label:

The Technical Committee states that a final judgment of whether the informatics-related learning outcomes of the Subject-Specific Criteria of the Technical Committee 04 are fully met in the Software Engineering and Internet of Things degree programmes is dependent upon of the fulfilment of the curriculum-related requirements. It therefore decides postponing the award of the label until then.

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Software Engi- neering	With requirements for one year	Euro-Inf® Upon fulfilment of the requirements	30.09.2024
Ba Internet of Things Engineering	With requirements for one year	Euro-Inf® Upon fulfilment of the requirements	30.09.2024

The Technical Committee recommends the award of the seals as follows:

H Decision of the Accreditation Commission (28.06.2019)

Assessment and analysis for the award of the ASIIN seal:

The Accreditation Commission discusses the procedure. It particularly agrees with the experts' critical assessment of the overall qualification of the teaching staff and considers a major improvement in that regard necessary in order to keep the programmes in track with the development in the respective technological fields (requirement 1). There should be at least one person, which through its research capability is best qualified to structure and promote the (further) development of the degree programmes. No professional experience whatsoever can easily compensate for that research competence. Additionally, the Accreditation Commission deems it necessary, that the full professor should be holder of a PhD at the same time, since it is particularly the science-based approach to research, which qualifies the PhD holder to be in charge of the degree programmes under review. That is why the Accreditation Commission decides not to follow the proposed amendment of the respective requirement of TC 02, which would broaden the opportunities of fulfilment. Apart from that, the Accreditation Commission agrees with the assessment and recommended resolution of the peers and the Technical Committees.

Assessment and analysis for the award of the EUR-ACE® Label:

The Accreditation Commission decides that a final judgment of whether the engineeringspecific learning outcomes of the Subject-Specific Criteria of the Technical Committee 02 are fully met is dependent upon of the fulfilment of the curriculum-related requirements. The Commission therefore decides postponing the award of the label until then.

Assessment and analysis for the award of the Euro-Inf[®] Label:

The Accreditation Commission decides that a final judgment of whether the informaticsrelated learning outcomes of the Subject-Specific Criteria of the Technical Committee 04 are fully met is dependent upon of the fulfilment of the curriculum-related requirements. The Commission therefore decides postponing the award of the label until then. With requirements

With requirements

With requirements

for one year

for one year

for one year

seals:			
Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Electrical Engi- neering and Auto- mation	With requirements for one year	EUR-ACE [®] Upon fulfilment of the requirements	30.09.2024

EUR-ACE®

Euro-Inf[®]

Euro-Inf[®]

requirements

requirements

requirements

Upon fulfilment of the

Upon fulfilment of the

Upon fulfilment of the

30.09.2024

30.09.2024

30.09.2024

The Accreditation Commission for Degree Programmes decides to award the following seals:

Requirements

Ba Internet of

Things Engineering

Ba Communication

Ba Software Engi-

Engineering

neering

For all degree programmes

- A 1. (ASIIN 4.1) It is necessary to provide evidence that at least one full professor with a PhD degree in the related disciplinary fields is in charge for each programme in order to responsibly define and reliably achieve the learning outcomes in the focus of the correspondent programme.
- A 2. (ASIIN 1.1) Draft the educational objectives / learning outcomes on the programme level more precisely with a specific focus on the differentiation between the programmes and their strong orientation towards applications. Make these objectives accessible for all relevant stakeholders and ensure that the stakeholders can refer to them. Include them also into the Diploma Supplement.
- A 3. (ASIIN 1.2, 1.3) Make sure and evidence that the name of the degree programme, its intended learning outcomes and its content correspond with each other.
- A 4. (ASIIN 2.2) Establish a process to systematically monitor the student workload in order to adapt the credit point allocation or the course design in case of significant discrepancies.

For the Bachelor's degree programme Software Engineering

A 5. (ASIIN 1.3) Strengthen the Software Engineering competences of students in the strict sense by integrating core topical courses into the curriculum.

Recommendations

For all degree programmes

- E 1. (ASIIN 4.1) It is highly recommended recruiting more teaching staff with higher academic qualifications (above Master degree) and advanced research records.
- E 2. (ASIIN 2.1) It is recommended to improve the coordination between the responsible colleges and programme coordinators in order to promote the teaching results and better achieve the intended learning outcomes.
- E 3. (ASIIN 2.1) It is recommended to reorganize thematically interlinked modules in the degree programmes (for instance, Circuit Fundamentals in EEA and Engineering Fundamentals in CE) in order to achieve a better coordination between the degree programmes and optimize the investment of resources (teaching staff in particular).
- E 4. (ASIIN 1.3) It is recommended to promote the idea of merging the programmes into one with specialised tracks in the related engineering fields at the regional and national levels.
- E 5. (ASIIN 2.1) It is recommended to successively develop and integrate at least some professional courses given in English language in order to strengthen the students' command of professional English.
- E 6. (ASIIN 4.2) It is recommended to foster the English teaching competences of the teaching staff.
- E 7. (ASIIN 5.1) It is recommended to adapt the module handbooks in such manner that the descriptions more transparently convey the course-related information, as the courses are the prime learning unit.
- E 8. (ASIIN 2.1) It is recommended to put in place and implement rules for the recognition of knowledge, skills or competences acquired at other universities (at home and abroad).

I Fulfilment of Requirements (26.06.2020)

Analysis of the peers and the Technical Committees (June 2020)

Requirements

For all degree programmes

A 1. (ASIIN 4.1) It is necessary to provide evidence that at least one full professor with a PhD degree in the related disciplinary fields is in charge for each programme in order to responsibly define and reliably achieve the learning outcomes in the focus of the correspondent programme.

Initial Treatment	
Peers	Not completely fulfilled
	Justification: Four new professors have been appointed for the
	four BSc programmes and have written the 'ASIIN Accreditation
	Rectification Report'. It is impressive that such a massive growth
	of professorial expertise could be implemented in such a short
	time. Clearly, in comparison to European BSc programmes, the
	share of professors in teaching and research is critically low, but
	in the Chinese context, one has to realize the strong commitment
	the university is evidencing by having appointed the four profes-
	sors. Furthermore, it is somewhat unusual that all the professors
	having been mentioned on the front sheet of the self-assessment
	report do not show up anymore in the aforementioned 'ASIIN Ac-
	creditation Rectification Report'. It seems the university got the
	message and made an important step forward.
	Two peers suspect an only formal fulfillment of the requirement
	missing information about whether the mentioned professors
	are <i>full-time members</i> of the teaching staff, work in <i>research</i>
	<i>field</i> s related to the programmes, and are actively engaged in
	teaching when being 'in charge' of the programmes.
TC 02	Not completely fulfilled
	Justification: The technical committee follows the minority of the
	peers and asks for more information about the direct involve-
	ment of the named professors in the Bachelor programmes.
TC 04	Not completely fulfilled
	Justification: The technical committee follows the minority of the
	peers and believes that the requirement has only been fulfilled
	formally.

A 2. (ASIIN 1.1) Draft the educational objectives / learning outcomes on the programme level more precisely with a specific focus on the differentiation between the programmes and their strong orientation towards applications. Make these objectives accessible for all relevant stakeholders and ensure that the stakeholders can refer to them. Include them also into the Diploma Supplement.

Initial Treatment	:
Peers	Not (completely) fulfilled <u>Justification</u> : The educational objectives are now presented as abilities in Figures 1,3,5 &7 of the report, which structure the programmes into competence fields. These figures are quite su- perficial and erroneous. A better description of the ability struc- ture and its relation to the curriculum is given in appendices B 9- 12. However, it is not reported whether, where and how these objectives are accessible to the teachers and students. The representation of the educational objectives in the diploma supplement of the Software Engineering programme is also erro- neous. They are called study requirements (e.g. on p.4 of the di- ploma supplement K 3), but they only coarsely match the ability structure of B 11, e.g. foreign language ability is cited twice, man- agement ability is missing. The respective list in K 4 for Internet of Things Engineering is ok.
	Two peers consider the requirement fulfilled satisfactorily. The university has clearly shaped the profiles of the different pro- grammes in an attempt to make them more focused on the topic at hand and simultaneously easier to be distinguished from each other. As evidenced in the provided appendices B1 through B4, the university has focused on topics in the four programmes, which correspond to usual topics in the study foci of comparable programs in programs being accredited by ASIIN in Germany and abroad. Still, the English being used in some of the descriptions (modules, reports etc.) and the Chinese structure of the pro- grammes make it sometimes difficult to identify immediately what is addressed, but shows a substantial improvement as com- pared to
TC 02	Not fulfilled <u>Justification</u> : The technical committee follows the majority of the peers.
TC 04	Not fulfilled <u>Justification</u> : The technical committee follows the majority of the peers.

A 3. (ASIIN 1.2, 1.3) Make sure and evidence that the name of the degree programme, its intended learning outcomes and its content correspond with each other.

Initial Treatment	
Peers	Fulfilled
	Justification: The contents of modules have been corrected and
	focused to core contents of respective programmes, where the
	corrected contents are shown in Figs. 1, 3, 5 and 7 of the 'ASIIN
	Accreditation Rectification Report'. Certain modules have been
	compared to the original descriptions and found to comprise
	meanwhile more relevant contents and thus following the re-
	quired coherence of the programme titles and their contents.
	Clearly, it should be kept in mind that the Higher education insti-
	tution (HEI) has to follow (and thus to keep) the specialty-related
	programme titles being predefined by ministerial regulations.
	Therefore, the mandatory change of contents while keeping the
	programme titles can be considered successful.
TC 02	Fulfilled
	Justification: The technical committee follows the decision of the
	peers.
TC 04	Not fulfilled
	Justification: In der Folge der nicht erfüllten Auflage 2 kann der
	Fachausschuss auch diese Auflage nicht als erfüllt betrachten.

A 4. (ASIIN 2.2) Establish a process to systematically monitor the student workload in order to adapt the credit point allocation or the course design in case of significant discrepancies.

Initial Treatment	
Peers	Fulfilled
	Justification: The rectification report presents ongoing measures
	concerning the quality management of various aspects of the stu-
	dents' learning processes. Thereby, the university seems to be on
	a good way towards fulfilling the requirement, though there are
	no results yet. It therefore seems adequate to do an explicit
	check of the results of monitoring and credit point allocation at
	the next re-accreditation in four years (s. proposed indication be-
	low).
TC 02	Fulfilled
	Justification: The technical committee follows the decision of the
	peers.
TC 04	Fulfilled
	Justification: The technical committee follows the decision of the
	peers.

For the Bachelor's degree programme Software Engineering

A 5. (ASIIN 1.3) Strengthen the Software Engineering competences of students in the strict sense by integrating core topical courses into the curriculum.

Initial Treatment	
Peers	Fulfilled
	Justification: The share of Software Engineering (SE) courses has
	been extended by three new courses, thereby increasing it from
	10 ECTS (4.2%) to 25.5 ECTS (10.6%). The increase comes at the
	expense of skipping some database and computer hardware
	courses. The overall percentage of software-related courses in
	the wider sense is about 47%, which is adequate for a sound, ap-
	plication-oriented education in software engineering. The core
	curriculum in B7 describes a well-rounded set of courses con-
	cerning basics of programming languages (Java & Python), data
	structures and relational databases (MvSOL), web-based soft-
	ware design (JSP, Android, Hadoop), computer and network ar-
	chitecture, and software engineering. Besides the SE-basics.
	three 6-ECTS-courses have been added concerning software ar-
	chitecture, software quality assurance and software processes.
	Furthermore, the courses for professional practices focus on
	web-software development (ISP, HTMI 5) and current trends (in-
	formation retrieval, cloud computing).
тс 02	Fulfilled
1002	Justification: The technical committee follows the decision of the
	neers
	Eulfillod
10.04	utification: The technical committee follows the desision of the
	<u>poors</u> . The technical committee follows the decision of the
	peers.

Decision of the Accreditation Commission (26.06.2020)

The Accreditation Commission discusses the fulfilment of requirements. It agrees with the assessment of the peers and the Technical Committees that requirements A4 and A5 are fulfilled, whereas requirements A1 and A2 and A3 are not satisfactorily fulfilled.

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Electrical Engi- neering and Auto- mation	Requirement A1, A2, A3 not fulfilled	EUR-ACE [®] Upon fulfilment of the requirements	6 months prolonga- tion
Ba Communication Engineering	Requirement A1, A2, A3 not fulfilled	EUR-ACE [®] Upon fulfilment of the requirements	6 months prolonga- tion
Ba Software Engi- neering	Requirement A1, A2, A3 not fulfilled	Euro-Inf® Upon fulfilment of the requirements	6 months prolonga- tion
Ba Internet of Things Engineering	Requirement A1, A2, A3 not fulfilled	Euro-Inf® Upon fulfilment of the requirements	6 months prolonga- tion

The Accreditation Commission extends the award of the seals as follows:

The Accreditation Commission for Degree Programmes decided to include the following indication for your institution:

"The quality development in the programmes according to the monitoring of the learning progress as well as the student workload and credit point allocation will be of special attention in the re-accreditation procedure."

Justification regarding requirements A1, A2, A3:

With regard to requirement A1 the Commission considers that the requirement has only been fulfilled formally, missing information about whether the mentioned professors are full-time members of the teaching staff, work in research fields related to the programmes, and are actively engaged in teaching when being 'in charge' of the programmes. The Commission thus asks for more information about the direct involvement of the named professors in the Bachelor programmes.

As regards requirement A2, the Commission notes that the educational objectives are now presented as abilities in Figures 1, 3, 5 and 7 of the rectification report, which structure the programmes into competence fields. However, according to the Commission these figures are quite superficial and erroneous. A better description of the ability structure and its relation to the curriculum is given in appendices B 9-12. However, it is not reported whether,

where and how these objectives are accessible to the teachers and students. The representation of the educational objectives in the diploma supplement of the Software Engineering programme is also erroneous. They are called study requirements (e.g. on p.4 of the diploma supplement K 3), but they only coarsely match the ability structure of B 11, e.g. foreign language ability is cited twice, management ability is missing. The respective list in K 4 for Internet of Things Engineering is ok.

Regarding requirement A3 the Commission follows the decision of the Technical Committee 04 and states that the requirement can only be considered sufficiently fulfilled once requirement A2 has been completely fulfilled. The names of the degree programmes, their intended learning outcomes and their contents can only adequately correspond with each other after the learning outcomes have been drafted more precisely and with a specific focus on the differentiation between the programmes.

Analysis of the peers and the Technical Committee/s (19.11.2020)

Requirements

For all degree programmes

A 1. (ASIIN 4.1) It is necessary to provide evidence that at least one full professor with a PhD degree in the related disciplinary fields is in charge for each programme in order to responsibly define and reliably achieve the learning outcomes in the focus of the correspondent programme.

Initial Treatment	
Peers	Not completely fulfilled
	Justification: Four new professors have been appointed for the
	four BSc programmes and have written the 'ASIIN Accreditation
	Rectification Report'. It is impressive that such a massive growth
	of professorial expertise could be implemented in such a short
	time. Clearly, in comparison to European BSc programmes, the
	share of professors in teaching and research is critically low, but
	in the Chinese context, one has to realize the strong commitment
	the university is evidencing by having appointed the four profes-
	sors. Furthermore, it is somewhat unusual that all the professors
	having been mentioned on the front sheet of the self-assessment
	report do not show up anymore in the aforementioned 'ASIIN Ac-
	creditation Rectification Report'. It seems the university got the
	message and made an important step forward.

	Two peers suspect an only formal fulfillment of the requirement missing information about whether the mentioned professors
	are full-time members of the teaching staff, work in research
	<i>field</i> s related to the programmes, and are actively engaged in
	teaching when being 'in charge' of the programmes.
TC 02	Not completely fulfilled
	Justification: The technical committee follows the minority of the
	peers and asks for more information about the direct involve-
	ment of the named professors in the Bachelor programmes.
TC 04	Not completely fulfilled
	Justification: The technical committee follows the minority of the
	peers and believes that the requirement has only been fulfilled
	formally.
AC	Not completely fulfilled
	Justification: The accreditation commission follows the decision
	of the technical committees.
Secondary Treat	ment
Peers	Fulfilled
	Vote: unanimous
	Justification: The rectification report states for all four persons
	listed that they are professors, have a PhD, are full-time employ-
	ees of the school, are heads of their respective specialty, and do
	teaching therein. The notion of a 'professor' seems to be identical
	to a permanently employed person holding a PhD and having a
	track record of publications in the corresponding area. In this re-
	spect, the requirement can be considered fulfilled.
TC 02	fulfilled
	Vote: unanimous
	Vote: unanimous Justification: The technical committee follows the decision of the
	Vote: unanimous Justification: The technical committee follows the decision of the peers.
TC 04	Vote: unanimous Justification: The technical committee follows the decision of the peers. fulfilled
TC 04	Vote: unanimous Justification: The technical committee follows the decision of the peers. fulfilled Vote: unanimous
TC 04	Vote: unanimous Justification: The technical committee follows the decision of the peers. fulfilled Vote: unanimous Justification: The technical committee follows the decision of the

A 2. (ASIIN 1.1) Draft the educational objectives / learning outcomes on the programme level more precisely with a specific focus on the differentiation between the programmes and their strong orientation towards applications. Make these objectives accessible for all relevant stakeholders and ensure that the stakeholders can refer to them. Include them also into the Diploma Supplement.

Initial Treatment	
Peers	Not (completely) fulfilled

	<u>Justification</u> : The educational objectives are now presented as abilities in Figures 1,3,5 &7 of the report, which structure the programmes into competence fields. These figures are quite su- perficial and erroneous. A better description of the ability struc- ture and its relation to the curriculum is given in appendices B 9- 12. However, it is not reported whether, where and how these objectives are accessible to the teachers and students. The representation of the educational objectives in the diploma
	neous. They are called study requirements (e.g. on p.4 of the di- ploma supplement K 3), but they only coarsely match the ability structure of B 11, e.g. foreign language ability is cited twice, man- agement ability is missing. The respective list in K 4 for Internet of Things Engineering is ok.
	Two peers consider the requirement fulfilled satisfactorily. The university has clearly shaped the profiles of the different pro- grammes in an attempt to make them more focused on the topic at hand and simultaneously easier to be distinguished from each other. As evidenced in the provided appendices B1 through B4, the university has focused on topics in the four programmes, which correspond to usual topics in the study foci of comparable programs in programs being accredited by ASIIN in Germany and abroad. Still, the English being used in some of the descriptions (modules, reports etc.) and the Chinese structure of the pro- grammes make it sometimes difficult to identify immediately what is addressed, but shows a substantial improvement as com- pared to
TC 02	Not fulfilled <u>Justification</u> : The technical committee follows the majority of the peers.
TC 04	Not fulfilled <u>Justification</u> : The technical committee follows the majority of the peers.
AC	Not completely fulfilled <u>Justification</u> : The accreditation commission follows the decision of the technical committees.
Secondary Treat	ment
Peers	Not fulfilled/Almost fulfilled
	Vote: 1:3
	Justification:
	Regarding the first sentence of the requirement:

	1) According to one of the peers, it is simply impossible to infer what is relevant and what is not or how the programs differ from each other for a student not having a sound background in the individual programs prior to reading the corresponding descrip- tions. Moreover, there is far too much text for few statements that could be formulated in few concise sentences.
	2) The three other peers state that the relations described be- tween the set of objectives, the corresponding learning out- comes, and the 15 different competence fields in the programs' architectures fulfil the requirements of the first sentence of this requirement. Since the "professional competence fields" infor- mation is given here separately for each major, the differences of the four programs become explicit, too.
	Regarding the second and third sentence of the requirement: All peers agree that the rectification report still does not report whether and how the objectives are made accessible to the rele- vant stakeholders (especially teachers and students).
	All peers agree that concerning the diploma supplements, a de- tailed inspection of the updated appendices reveals that the changes in the updates as compared to the original versions are negligible and definitely insufficient to satisfy the requirement.
TC 02	not fulfilled Vote: unanimous Justification: It is still unclear whether and how the objectives are made accessible to the relevant stakeholders (especially teachers and students). Moreover, the changes in the diploma supple- ment are negligible and definitely insufficient to satisfy the re- quirement.
TC 04	not fulfilled Vote: unanimous Justification: The technical committee follows the decision of the peers.

A 3. (ASIIN 1.2, 1.3) Make sure and evidence that the name of the degree programme, its intended learning outcomes and its content correspond with each other.

Initial Treatment	
Peers	Fulfilled
	Justification: The contents of modules have been corrected and
	focused to core contents of respective programmes, where the

	corrected contents are shown in Figs. 1, 3, 5 and 7 of the 'ASIIN Accreditation Rectification Report'. Certain modules have been compared to the original descriptions and found to comprise meanwhile more relevant contents and thus following the re- quired coherence of the programme titles and their contents. Clearly, it should be kept in mind that the Higher education insti- tution (HEI) has to follow (and thus to keep) the specialty-related programme titles being predefined by ministerial regulations. Therefore, the mandatory change of contents while keeping the programme titles can be considered successful.
TC 02	Fulfilled <u>Justification</u> : The technical committee follows the decision of the peers.
TC 04	Not fulfilled <u>Justification</u> : As a result of requirement 2 not being fulfilled, the technical committee cannot consider this requirement to be ful- filled either.
AC	Not completely fulfilled <u>Justification</u> : The accreditation commission follows the decision of the TC 04.
Secondary Treat	ment
Peers	Fulfilled/not fulfilled Vote: 3:1 Justification: The university has provided an overview of the dif- ferent competences to be gained and their distribution over the programs. Moreover, it has been described how certain learning objectives and competences should be strengthened. This is enough to fulfil the requirement according to three peers. Ac- cording to one of the peers, however, it remains unclear how the learning outcomes, the contents and the names of the degree programs match, since they have only been listed in tables and/or figures without connecting them to one another. Instead of these tables and figures, the intended learning outcomes must be linked directly to their contents for each program and to the respective modules.
TC 02	not fulfilled Vote: unanimous Justification: For the technical committee, it remains unclear how the learning outcomes, contents and the name of the degree program match each other.

nical committee therefore suggests asking the university to dis-
play the learning outcomes more thoroughly and in clear alloca-
tion with the modules and the study program as a whole.

Decision of the Accreditation Commission (03.12.2020)

Degree programme	ASIIN-label	Subject-specific label	Accreditation until max.
Ba Electrical Engineering and Automation	Refusal	Refusal	/
Ba Communication Engine- ering	Refusal	Refusal	/
Ba Software Engineering	Refusal	Refusal	/
Ba Internet of Things Engi- neering	Refusal	Refusal	/

The Accreditation Commission justifies its decision as follows:

According to the Accreditation Commission, the requirements A2 and A3 still have not been fulfilled during the second round of the fulfillment of requirements.

With regard to requirement A2, it is still unclear for the Accreditation Commission as well as the Technical Committees how the four programs, their educational objectives and learning outcomes differ from one another. Instead of providing extensive text passages, the educational objectives and learning outcome should be formulated in a concise and precise manner. Moreover, the updated still does not report whether and how the objectives are made accessible to the relevant stakeholders (especially teachers and students). Concerning the diploma supplements, a detailed inspection of the updated appendices reveals that the changes in the updates as compared to the original versions are negligible and thus insufficient to satisfy the requirement.

Regarding requirement A3, it remains unclear how the learning outcomes, the contents and the names of the degree programs match, since they have only been listed in tables and/or figures without connecting them to one another. Instead of these tables and figures, the intended learning outcomes must be linked directly to their contents for each program and to the respective modules.

According to the "Electrical Engineering and Automation Professional Training Programme" (Annex B1) the following **objectives** and **learning outcomes (intended qualifications pro-file)** shall be achieved by the respective Bachelor's programme:

(II) Professional knowledge requirements

This major requires students to master the following aspects of knowledge:

1. Make a good foundation for mathematics and foreign languages;

2 Master the basic knowledge of computer software and hardware, and possess the basic capabilities of computer software and hardware development;

3. Master basic circuit analysis, signal and system theory, analysis and experimental methods;

4. Master the basic theory and analysis, design methods and experimental skills of analog and digital circuits;

5.Comprehensively systematically mastering the broad theoretical knowledge of the basic technology required in this field of expertise, including circuit basis, electronic technology, control theory, power supply and distribution technology, computer software and hardware infrastructure, and applications;

6.Good knowledge of power system analysis, power electronics technology, relay protection, motor control, etc., with professional knowledge and skills in this field, understanding of the frontiers and development trends of the discipline, have the ability to acquire knowledge and continue learning;

7.In the power system industry, students can be engaged in technical or management work related to power operation and control, power system maintenance, power system design, power system construction and power system professional; in the general sector of the national economy, they can engage in repair and maintenance of electrical equipment, electrical equipment installation and commissioning, electrical system control and design, electrical system operation and management, equipment and equipment production design and related professional technical management;

8. Acquire the ability to solve electrical engineering problems, engage in electrical engineering design, repair and maintenance of electrical equipment, operation and control of electrical systems, installation and commissioning of electrical equipment, production design and technical management of equipment and equipment, etc. In this field of expertise, they have capabilities to do certain scientific research, capability of scientific and technological development, organization and management, the adaptability and capabilities of organizational management.

(III) Management capability requirements

 Grasp the basic theory, basic knowledge and methods of modern enterprise management, and master the qualitative and quantitative analysis methods of enterprise management;

 Master the skills and methods of modern business operation management and entrepreneurial management, and have comprehensive capabilities in entrepreneurial design, project management and team management;

3. Ability to work with enterprise management software;

4. Basically grasp the basic principles of the socialist market economy, laws and information industry and the basic knowledge of enterprise management, and be familiar with the policies and regulations of Chinese enterprise management and the practices and rules of international enterprise management.

(IV) Comprehensive Quality Requirements

1. Broaden their horizons, have a certain degree of scientific spirit and humanistic qualities, critical thinking; have a certain artistic accomplishment and aesthetic ability; have good team spirit and effective communication, coordination and cooperation; have the courage, innovation, will, perseverance and spirit;

 Has strong analytical ability, writing ability, language expression ability, good communication ability and basic ability to solve practical problems in enterprise management work;

 Master the basic methods of document retrieval and data query, and have the ability to search, collect, identify, judge, and use information materials for comprehensive analysis and management;

4. Master certain basic sports knowledge and scientific basic physical exercise skills, have good physical exercise and hygiene habits, have a healthy body and good psychological quality, respect life, care for others.

(V) Professional quality and ability requirements

The professional ability training chart is shown in Figure 1.



Figure1 Professional Ability Training Chart

Module name Course Name Type C3 S3 S4 S5 S6 S7 Higher Mathematics Part 1 L 6 H C H	Conce of the		ngying oii	many or	1 0515 4	in ici																		
	Module name	Course		_	S	1		52	5	3		54	S	5	5	56		\$7	5	5 <mark>8</mark>				
		Course Name		Туре	CP	н	CP	H	CP	н	CP	н	СР	н	CP	H	CP	H	CP	н				
Markenics Physics Fundamentals Physics Fundamentals Higher Mathematics Part 2 L 5 130 L L 5 130 L L 5 130 L L 5 130 L L 5 100 L L L 5 100 L L L L 5 100 L		Higher Mathematics Par	rt 1	L	6	180																		
Physics Fundamentals Linear Algebra L 3 00 Image and the second secon	Module 1 Mathematics &	Higher Mathematics Par	rt 2	L			5	150																
	Physics Fundamentals	Linear Algebra		L			3	90																
Colleg Physic Experiment (A) P 4 120 A A 120 A A 120 A <tha< th=""> A A</tha<>		College Physics (A)		L			4.5	135																
Module 2 Computer Science Fundamentals College Computer C Language Programming L&P 5 150 .		College Physics Experime	nt (A)	Р					4	120														
Computer Science Fundamentals C Language Programming L&P 5 150 I	Module 2	College Computer		L&P	5	150																		
Module 3 Curcuit Fundamentals Basics of Electrical Curcuit Analysis L&P 4.5 135 .	Computer Science Fundamentals	C Language Programmi	ing	L&P			5	150																
Circuit Fundamental Basics of Electronic Carcuit L&P 5 150 - <t< td=""><td>Module 3</td><td>Basics of Electrical Circuit A</td><td colspan="2">Basics of Electrical Circuit Analysis I Basics of Electronic Circuit I</td><td></td><td></td><td>4.5</td><td>135</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Module 3	Basics of Electrical Circuit A	Basics of Electrical Circuit Analysis I Basics of Electronic Circuit I				4.5	135																
Digital Circuit and Logic Design L&P 5 150 1	Circuit Fundamentals	Basics of Electronic Cire	cuit	L&P					5	150														
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Module 4 Control Engineering Fundamentals MATLAB and its Application in Engineering Principles and Application of Automatic Control of Automatic Control engineering L&P Image: Control Principles and Application of Automatic Control Automatic Control engineering L&P Image: Control Principles and Application of Automatic Control Automatic Control engineering L&P Image: Control Principles and Application of Automatic Control Automatic Control Principles and Application of Automatic Control engineering P Image: Control Principles and Application Principles and Application Control Engineering P Image: Control Principles and Application Principles and Application Control Technology P Image: Control Principles and Principles and Principl		Control Signal and System		L					4.5	135														
Module 4 Control Engineering Fundamentals Conce in the integrate of		MATLAB and its	Choose																					
Control Engineering Fundamentals Principles and Application of Automatic Control Control Engineering Choose one in two L&P Image: Control Engineering Total Total <thtotal< th=""> Total Total</thtotal<>	Module 4	MATLAB and its Application in Electrical Engineering	one in two	L&P									4	120										
Control Engineering two Image: control Engineering two Image: control Engineering Course Project (Principles and Application of Automatic Control) Course Project (Control engineering) Choose one in two P Image: control Engineering 2 60 Image: control Engineering Modem Control Theory and Application Choose one in two Image: control two Image: control Engineering Image: control Enginering Image: control Engineering <td>Control Engineering Fundamentals</td> <td>Principles and Application of Automatic Control</td> <td>Choose one in</td> <td>L&P</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>7</td> <td>210</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Control Engineering Fundamentals	Principles and Application of Automatic Control	Choose one in	L&P									7	210										
Module 5 Electrical Machinery Drive and Control Technology Choose one in two P Choose one in two <		Control Engineering	two																					
Module 5 Electrical Equipment Control Technology Choose one in two P Choose one in two Choose one in two <thc< td=""><td></td><td></td><td>010</td><td>, <u> </u></td><td><u> </u></td><td></td><td>T</td><td>· · · ·</td><td>r</td><td>r</td><td><u> </u></td><td>r –</td><td>r</td><td>r</td><td>r –</td><td>r</td><td>r</td><td><u> </u></td><td>r</td><td><u> </u></td></thc<>			010	, <u> </u>	<u> </u>		T	· · · ·	r	r	<u> </u>	r –	r	r	r –	r	r	<u> </u>	r	<u> </u>				
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$ \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		Single Chip Microcomputer and Embedded Control Technology	Choose one in	L&P							5.5	165												
Module 5 Electrical Control and PLC Technique L&P 5.5 165 165 165 Electrical Equipment Control Technology Electrical Machinery Drive and Control Motor L&P 5.5 165 <th< td=""><td></td><td>Computer Control Technology</td><td>two</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>		Computer Control Technology	two																					
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Motion Control System one in two L&P Image: Control System 4 120 Integrated Design of Electrical Courses P Integrated Design of Electrical Course Integrated Design of	Control Technology	Control Motor	Choose																					
Module 6 Power System Basics Power System Analysis L Solution Solu		Motion Control System	one in	L&P			+								4	120								
Module 6 Power System Basics Power Electronic Technology L&P Image: Constraint of the system Analysis L Image: Constraint of the system Analysis L <td></td> <td>Integrated Design of Electric</td> <td>two al Courses</td> <td>Р</td> <td></td> <td>3</td> <td>90</td> <td></td> <td></td> <td></td> <td><u> </u></td>		Integrated Design of Electric	two al Courses	Р											3	90				<u> </u>				
Module 6 Power System Basics Power System Analysis L Image: Constraint of the cons		Power Electronic Techn	ology	L&P			-						5.5	165										
High Voltage Technique L 3 90 Module 7 Electrical Mapping and Cattography L&P 4 120 Power Engineering Distribution Technology Choose L	Module 6 Power System Basics	Power System Analys	sis	L											4	120								
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Module 7 Power Supply and Distribution Technology Choose Image: Choose		Electrical Mapping and Car	tography	L&P		+	1				4	120												
Design Electrical Part of the Power two Diama Lock Strain	Module 7 Power Engineering Design	Power Supply and Distribution Technology Electrical Part of the Power	Choose one in two	L&P									5.5	165										

The following **curriculum** is presented:

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	Comprehensive Desig	n of Power	Р													3	90		-
	Metalworking Pr	actice	p			2	60								<u> </u>				
	Electric Fitting P	actice	P			~		1	30									-	-
Module 8		Off-campus						-										<u> </u>	<u> </u>
Engineering Practice	Graduation Practice	internship On-campus internship	Р													16	480		
Module 9 Bachelor Thesis	Graduation Thesis (Project)																30	900
	College English	ı I	L	4.5	135														
M-1-1-10	College English	ı II	L			4.5	135												
Module 10	College English	ıⅢ	L					4.5	135										
English	College English	n IV	т							4.5	125								
	Professional English	Elective)								4.5	155								
	Guidance for College Students' Mental Health		Р	0.5	16														
Module 11	Guidance for College Students' Career													-	<u> </u>	+		+	+
Professional	Development and Employment		Р			0.5	16												
Literacy and	The Key Ability of	Career	L&P											1	30			-	
Engineering	Fundamentals for College Students'													-				-	-
Management Capabilities	Innovation Entrepre	L			0.5	16													
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	Human Resource Ma	nagement	L					2	60										
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Module 12	Human Resource Ma Financial Manag Marketing Management Science(selective) Organizational Behavior(selective) Enterprise Investment and Financing Management(selective Modem Advertising(selective) Musical Dran From a Novels to a The Introduction of Classical Music	Choose						2	60	2	60	2	60	2	60				
Module 12 Humanities and Art	Human Resource Ma Financial Manag Marketing Management Science(selective) Organizational Behavior(selective) Enterprise Investment and Financing Management(selective Modem Advertising(selective) Musical Dran From a Novels to a The Introduction of Classical Music	Choose Ch		1	32			2	60	2	60	2	60	2	60				
Module 12 Humanities and Art	Human Resource Ma Financial Manag Marketing Management Science(selective) Organizational Behavior(selective) Enterprise Investment and Financing Management(selective Modern Advertising(selective) Musical Drar From a Novels to a The Introduction of Classical Music Appreciation of Classic Films	Choose One in Four Four A Films Choose one in two		1	32			2	60	2	60	2	60	2	60				
Module 12 Humanities and Art	Human Resource Ma Financial Manag Marketing Management Science(selective) Organizational Behavior(selective) Enterprise Investment and Financing Management(selective Modem Advertising(selective) Musical Drar From a Novels to a The Introduction of Classical Music Appreciation of Classic Films World Literature of Th Years	Choose One in Four Four A Films Choose one in two			32				60	2	60	2	60	2	60				
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Conce or in	foone reaccommunications of	non-Bdung our	iversity of	x 0000 0	no rea	com.												
	Rhetoric and Persuas	sion	L			1	32											
	Persuasion and Reasoning	Choose in	т							1	32							
	Classic Speech	two	L								52							
	The Theory of Just	ice	L							1	32							
	Positive Psycholog	gy	L					1	32									
	Freud, Jung and Adler(selective)	Choose	L													1	32	
	Zen Culture(selective)	two														1	32	
Module 13 Philosophy and Social	The Modern Progress of F Civilization	European	L											1	32			
Science	American Social and Publ	lic Policy	L	1	32													
	International Conflicts Contemporary Wo	International Conflicts of the Contemporary World				1	32											
	Economics		L									1	32					
	Chinese Public Policy Urbanization	y and	L											1	32			
	I																	
	American Democracy (selective)																	
	Russell and History of Western Philosophy(selective)	Choose one in two	L									1	32					
	The World Established by Confucius and His Dis	Socrates, ciples	L					1	32									
	Information Technology an	nd Society	L									1	32					
	Ethics in Life Science																	
	Ethics in Life Scien	ice	L											1	32			
	Ethics in Life Scien	ice cs of Law	L L&P	1	32									1	32			
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Module 14 Political Thought and	Ethics in Life Scien Moral Education and Basi Outline of Modern Chines Basic Principles of Ma	ice cs of Law e History irxism	L L&P L L&P	1	32					1	32			1	32			
Module 14 Political Thought and Moral Cultivation	Ethics in Life Scien Moral Education and Basic Outline of Modern Chines Basic Principles of Ma Introduction to Maoist Theoretical System of Soci Chinese Characteris	cce of Law e History rxism n and alism with tics	L L&P L L&P L&P	1	32					1	32	2	96	1	32			

College UI M	oue relecommunications Chongqing University OF Posts and relecom																		
	Military Theory and Training	including																	
	freshman orientation and	safety	Р	2	3W														
	education)																		
	Physical Education]		L&P	1	32														
	Physical Education I	L&P			1	32													
	Physical Education II	I	L&P					1	32										
	Physical Education IV									1	32								
	Extension Training	Р			0.5	16													
	Competitive Sports		L&P													2	60		
Module 15	Campus Activities and Social	Р													1				
The Practice of Moral.	Volunteer Service		Р													1			
Intellectual, Physical and Aesthetics	al, Art Accomplishment and Practice		Р													1			
·	Masters Rostrum	Choose in	L											1	30				
	Masters Lecture	two	L											1	32				
CP/ semester				29	883	29	880	31	972	33	1034	28	908	30	908	30	942	30	900

Note:

1. CP: Credit point

2. W: Week

3. L&P: Learning and practice

According to the "Communication Engineering Professional Training Program" (Annex B2) the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the respective Bachelor's programme:

(2) The requirements of professional knowledge

The students are expected to have the following knowledge:

1) To set up a good foundation of mathematics, physics and foreign language.

② To have the basic computer knowledge about software and hardware, and have the basic ability of development with the computer.

③ To master the basic theory, analysis and experiment methods about the circuit analysis, signal and system,

④ To master the basic theory and analysis, design method and experimental skills about analog and digital circuits,

(5) To master the general principles and techniques of information processing, transmission and exchange.

(6) To master the basic principles and techniques of typical communication systems, to intensively understand the theory and technology of the information network, and focus on the theory and technology of broadband communication network. To build a solid foundation for dealing with the work of telecommunications, computer and television networks, etc. To have the hands-on background in the aspects of engineering design, technology development, equipment maintenance, network optimization and so on.

 \bigcirc To be with a solid professional foundation, professional knowledge and skills, professional innovation methods and awareness, to keep up with the development of communication technology, to have the basic and potential ability for developing a new system.

(3) The requirements of management capability

① To master the basic theories, basic knowledge and methods of modern business

management, to be familiar with the qualitative and quantitative analysis methods.

② To master the skills and means of modern business operational management and entrepreneurship, to have the comprehensive capabilities in entrepreneurial design, project management, and team management.

③ To have the ability of work with the software of business management.

④ To general know the basic principles of socialist marketing economy, the law and the information industry as well as the basic knowledge of business management, be familiar with the policies and regulations of Chinese business management, and the conventions and rules of international business management.

(4) The requirements of comprehensive quality

① To broaden the horizons of students, to have a certain scientific spirit and humanistic quality and critical thinking, to have a certain artistic accomplishment and aesthetic ability, to have good teamwork spirit and ability of effective communication, coordination and cooperation, to have the courage to innovate with consciousness, willpower, perseverance and spirit.

② To have stronger ability of analysis, writing, language expression, good communication and basic ability to solve practical problems of business management.

③ To master the basic methods of literature search and data inquiry, and have the ability of information retrieval, collection, identification, judgment and utilization of information and data for comprehensive analysis and management.

④ To master certain basic knowledge about sports and basic physical training skills, to have better habits of physical exercise and health, healthy body and psychological diathesis for respecting life and caring for others.

(5) Professional quality and ability requirements

The ability architecture of communication engineering is shown in following figure 1:



Figure 1 the ability architecture of communication engineering program

Madalaan	Cours	se		S	1	S	2	s	3	S	4	S	5	S	66	S	7	5	58	
Module name	Course Name		Type	СР	H	СР	H	СР	H	СР	H	СР	Н	СР	Н	СР	Н	CP	Н	
	Higher Mathematics	Part 1	L	8	240															
	Higher Mathematics	Part 2	L			7	210													
Module 1	Linear Algebra	ก	L			2	60													
Mathematics &	Probability Theory	y and																		
Physics	Stochastic Proce	ess	L					3	90											
Fundamentals	Complex Functi	on	L					2	60											
	College Physics	(A)	L			4	120													
	College Physics Experi	iment (A)	Р					2	60											
	College Comput	ter																		
	(Experiment inclu	ded)	L&P	6	180															
Module 2	C Language Program	mming																		
Computer Science	(Experiment inclu	ded)	L&P			4	120													
Fundamentals	Applied Technology of	Database																		
	(Experiment inclu	ded)	L&P							3	90									
	Basics of Circuit Ar	nalysis	TOD				105													
	(Experiment inclu	ded)	L&P			4.5	135													
	Basics of Electronic	Circuit	Ten					6	100											
M . 1.1. 1	(Experiment inclu	ded)	Lar					0	100											
Engineering	Digital Circuit and Log	gic Design	L&P					7	210											
fundamentals	Communication Ele	ctronic	-							_										
	Circuit		L							2	60									
	Signal and Syste	em and ()	L&P							6.5	195									
	Digital Signal Proc	essing	L&P									6	18							
												-								
	(Experiment inclu	ıded)											0							
	Microprocessor S	ystem																		
	Structure and Emb	oedded	T & D							7.5	225									
	System Design	n	Lai							1.5	225									
	(Experiment inclu	ıded)																		
	Course Projec	et.	n						132											
	(Digital Circuit and Design)	Logic	r					1	1.00											
Module 4	Course Projec	ct																		
fundamentals	(Microprocessor S Structure and Emb	System oedded	Р							1	1W									
Practice	System Design)																		
	Electric Fitting Pr	actice	Р									1	1							
							<u> </u>						W							
	Engineering	inication	L	1	30															
	Electromagnetic Fi	eld and	T									=	15							
Module 5	Electromagnetic V	Vaves	L									2	0							
Engineering	Communication Bui	inciples	т									•	24							
Principle	Communication III	incipies	L									°	0							
	Experiment (Basi	ics of	Р									2	60							
	Communication Tech	nnology)	-									-								
Module 6	Modern Information	Network	L											13	390					
Engineering	and Innovatio	u muioc ti c								-				-						
Applications	Transmission	numcation	L											6	180					
	Mobile							-	-	-										
Module 7	Communication																			
Advanced	Principle and	Selectio	L&P													6	180			
Engineering	The Technology	n one			-		-							-		1				
Technology	IoT and 5G																			

The following **curriculum** is presented:

- u	sucge of moone reacconin	пошсанонь,	Chongqu	це оши	usity or	L USIS AL	ia reice	om.												
	The Principle and Technology of Telecommunication																			
	Cloud																			
	Fiber-optical																			
	Communication Principle and																			
	Technology																			
	Optical Fiber Cable	Selectio																		
	Engineering and	n one	L&P													6	180			
	Measurement																			
	Multimedia	1																		
	Communication																			
	Technology																			
	Wideband Access																			
	Next Generation	1																		
	Network Principle	Selectio	L													4	120			
	and Technology	n one																		
	Technical English																			
	Enterprise	Outside	<u> </u>																	
	Internshin	campus																		
	Internship of Mobile		1	<u> </u>																
	Communication																			
Module 8	Internship of	1		<u> </u>																
Comprehensive Internship	Switching		р													6	AW			
	Technology	Inside	r													Ů				
(Selection One)	Network and	Campus																		
	Security Technology																			
	Security rechnology																			
	Internsnip	-																		
	Internship of																			
	Wideband Access																			
	Technology	-																		
	Internship Optical															1				
	Fiber																			
	Communication																			
Module 9	Communication																			
Bachelor Thesis	Graduation Thesis (Project)	Р															27	16W	
	College English	11	L	6	180															
Module 10	College English	12	L			6	180													
English	College English	13	L					6	180											
	College English	n 4	L							6	180									
	Guidance for College Mental Healt	Students' h	Р	0.5	16															
	Guidance for College	students'																		
	Career Developme	nt and	L			0.5	16													
	Employment																			
Module 11	The Key Ability of	Career	L&P											2	60					
Professional	Basics for College St	tudents'					_													
Literacy and	Entrepreneurs	hip	L			0.5	16													
Engineering	Entrepreneurship																			
	Innovation and		P	1													20			
Management	Innovation an Entrepreneurship Pr	actice of	Р														30			
Management Capabilities	Innovation an Entrepreneurship Pr College Studen	actice of its	Р													1	30			
Management Capabilities	Innovation an Entrepreneurship Pr College Studen Human Resource Mar	actice of its	P					2	60							1	30			
Management Capabilities	Innovation an Entrepreneurship Pr College Studen Human Resource Man Financial Manage	actice of hts nagement	P L					2	60	2	60					1	30			
Management Capabilities	Innovation an Entrepreneurship Pr College Studen Human Resource Mar Financial Manage Marketing	actice of hts nagement ement	P L L					2	60	2	60	2	60			1	30			
Management Capabilities	Innovation an Entrepreneurship Pr College Studen Human Resource Mar Financial Manage Marketing	ractice of hts nagement ement	P L L L					2	60	2	60	2	60			1	30			
Management Capabilities	Innovation an Entrepreneurship Pr College Studen Human Resource Mar Financial Manage Marketing Management Science	actice of its nagement ement Selectio	P L L L L					2	60	2	60	2	60	2	60		30			

	incge of moothe reacconin	нинсанонь,	спондчи	ig Oiiiw	ciany or	i usis a	na reice	om.											
	Behavior	one																	
	Enterprise	1																	
	Investment and																		
	Financing																		
	Management																		
	Modern Advertising																		
	Musicals Dran	na	L									1	32						
	From Novel to a	Film	L							1	32								
	The Introduction to																		
	Appreciation of	selection	L	1	32														
Module 12	Classic Films	one																	
Humanities and	World Literature o	f Three			<u> </u>														
Art	Hundred Years		L	1	32														
	Creative Writi	nσ	L			1	32												
	Rhotoric and Perc		T			1	32												
	Persuasion and	L			-	32													
	Reasoning	Selectio	Т							1	32								
	Classic Speech	n one		<u> </u>						1	32								
	Classic Speech The Theory of Justice		T							1	32								
	Positive Psychology		T					1	32	-									
Module 13	T bla b	I I	L					-	32										
Philosophy and	Freud, Jung and	Selectio																	
Social Sciences	Zen Culture	n one	L	<u> </u>												1	32		
	Zen Culture																		
	The Modern Prog	ress of	L											1	32				
	llege of Mobile Telecomn	numications,	Chongqu	ng Unive	ersity of	Posts a	nd Telec	om.											
	European Civiliz	ation																	
	American Social and	l Public	T	1	22														
	Policy		L	1	32														
	International Conflic	ts of the	L			1	32												
	Contemporary W	orld	-			-													
	Economics		L									1	32						
	Chinese Public Poli	icy and	L											1	32				
	American																		
	Democracy																		
	Russell and History	Selectio	L									1	32						
	of Western	n one																	
	Philosophy																		
	The Word Created by	Socrates																	
	and Confucius wit	h their	L					1	32										
	Disciples																		
	Information Technol	logy and	L									1	32						
	Society		_									_		_					
	Ethics of Life Sci	ence Basis f	L											1	32				
	Moral Education and	Dasics of	L&P	1	32														
Module 14	Dutline of Modern 4	Chinese																	
Political	History	camese	L											1	32				
Political Thought and — Moral —			I & D							1	32								
	Basic Principles of M	larxism	Loci																
Moral	Basic Principles of M Introduction to Mao	ism and	Lai																
Moral Cultivation	Basic Principles of M Introduction to Mao Theoretical System of	ism and Socialism	L&P									3	96						

~ ~ ~	nege of moone reaccommunications,	спондчи	ц оши	лэну от	1 UDID di	iu reice	.ош.											
	Situation and Policy	L&P	0	32			0	32			0	32			0	32		
	Military Theory and Training	Р	1	3W														
	Physical Education I	L&P	1	32														
	Physical Education II	L&P			1	32												
	Physical Education III	L&P					1	32										
Module 15	Physical Education IV	L&P							1	32								
The Practice of	Extension Training	Р			0.5	16												
Moral,	Competitive Sports	L&P													1.5	48		
Intellectual,	Campus Activities and Social	D													1			
Physical and	Practice	r													1			
Aesthetics	Volunteer Service	Р													1			
	Art Accomplishment and	п													1			
	Practice	r													1			
	Masters Rostrum	т											1	22				SUM
	Masters Lecture	L											1	52				SUM
CP/ semester			27.5		33		32		33		31		28		28.5		27	240

Note:

1. CP: Credit point

2. W: Week

3. L&P: Learning and practice

According to the "Software Engineering Professional Training Programme" (Annex B3) the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the respective Bachelor's programme:

2Expert knowledge requirements

- Master the basic theory and basic knowledge of computer science and technology;
- Master scientific thinking methods, engineering design methods and good engineering literacy;
- Master the knowledge and skills of software engineering, and possess the professional capabilities required by software engineers to engage in engineering practice;
- Master system software and application software analysis, design and development capabilities;
- Lifelong learning ability, information acquisition ability, ability to adapt to discipline development;
- Master a foreign language, with the ability to read and process professional foreign language technical data, and skillfully handle related English business documents;
- Master basic knowledge of humanities, natural sciences, engineering, and other basic disciplines;
- In the basic engineering design and practice and other aspects have a certain sense of innovation and ability;
- Train software teamwork and effective coordination skills to enable students to adapt and develop students with considerable organizational and leadership skills.

③Management capability requirements

- Master the basic theories, basic knowledge and methods of modern enterprise management, and master the qualitative and quantitative analysis methods of enterprise management;
- Master the skills and methods of modern business operation management and entrepreneurial management, with comprehensive capabilities in entrepreneurial design, project management and team management;
- Ability to work with enterprise management software;
- Gradually grasp the basic principles of the socialist market economy, law, and information
 industry and the basic knowledge of enterprise management, and be familiar with the
 policies and regulations of Chinese enterprise management and the practices and rules of
 international enterprise management.

④Comprehensive quality requirements

- Broaden his horizons, have a certain degree of scientific spirit and humanistic qualities, critical thinking; have a certain artistic accomplishment and aesthetic ability; have good team spirit and effective communication, coordination and cooperation; have the courage to innovation, will, perseverance and spirit;
- Strong basic analytical skills, writing skills, language skills, good communication skills and practical problems in solving corporate management problems;
- Master the basic methods of document retrieval and data query, and have the ability to search, collect, identify, judge, and use information materials for comprehensive analysis and management;

 Master certain basic sports knowledge and scientific basic physical exercise skills, have good physical exercise and hygiene habits, have a healthy body and good psychological quality, respect life, care for others.

5 Professional quality and ability requirements

The professional ability training chart is shown in Figure 1.



Figure 1 Professional capacity development chart

The following **curriculum** is presented:

Graduation Project

Graduation internship

Number	Modu1e Name		course		S1		S2		S3		S4		S5		S6		S7	
			Course Name	Тур е	CP	Hou rs	CP	Hou rs	СР	Hou rs	CP	Hou rs	CP	Hou rs	CP	Hou rs	CP	Hou rs
		College English	College English I 、 II 、 III、 IV		4. 5	135	4. 5	135	4.5	135	4.5	135						
1	College English		Professional English(optional subjects)															
		Mathematics	Higher Mathematics Part I 、 II		6	180	6	180										
	Subject		Linear Algebra Probability and Statistics				4	120			5	150						
2	Foundatio	Physics	College Physics (A)				5	150			·	100						
	n Module		Physics Experiment (A)						4	120								
		Electronic	Electrical and Electronic Engineering						6	180								
		onour	Introduction to Computer Science		5	150												
3	Programmi ng module		C Language Programming		6	180												
			C++ Language Programming				5	150										
	Database Svstem		Database Principles and Application						4. 5	135								
	Related Modules		Algorithm and Data Structure				5	150										
4			Java Programming						6	180								
			Dynamic Webpage Development								4.5	135						
1	1					-	1	_	1	1		1			1	1		
			Android Application Programming								4.5	135	i					
			Computer Organization and Structure								4	120)					
	Computer		Embedded System Design		-			-				-	4.5	135				<u> </u>
5	hardware related modules		Microcomputer principle and interface technology										4	120				
	Network		Computer Network										4.5	135				
6	operating system modules	r -	Operating System										4	120				
	Software		Software Engineering												5	150		
7	Engineeri ng modules		Software Quality Assurance and Testing												4. 5	135		
			Java Comprehensive Experiment								1	30						
			Web dynamic web page synthesis design										1	30				
	Professio		Android application comprehensive course design										1	30				
8	nal Practico		Embedded System Design experiment												1	30		
	Module		Database Course Design								1	30)					
			Comprehensive design of algorithm						1	. 30								

Curriculum Plan of Software Engineering

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9	Bachelor Thesis		Graduation Project (Thesis)														
	Future Technolog		Future Information Technology											3	90		
10	y and Big Data Modules		Cloud computing and big data									3	90				
		Professional competence	Mental health education for college students	0.5	16												
			College students' career development			1	32										
			Workplace key capabilities									2	64				
	Professio		College Students' Innovation and	1	32												
	nal literacy		Entrepreneurship College Students' Innovation and	-												0	64
	and		Practice													2	04
11	engineeri ng	Leadership shaping	Human Resource Management									2	64				
	managemen +		Financial Management					2	64								
	capabilit		March a t i m m							2	64						
	ies		Margement Science											2	64		
			Organizational Behavior											2	64		
		Lxecutive leadership	Corporate investment and financing											2	64		
		elective	management											-	• •		
		course	Modern Advertising											2	64		
			The Word Created by Socrates and Confucius with their Disciples							1	32						
		Humanistic spirit and life care	World Literature: Since 18th Century	1	32												
1	1	1	On Democracy of the United States														
			Russell and History of Western														
		Communicatio	Philosophy Creative Writing			1	32			\vdash		┢					
		n expression and rational evaluation	Photonia and Logia	-	-	-		1	20	-	-		-		-		
						-		1	32								
			Persuasion and Reasoning														
			Classic Speech														
		Art creation	Musicals											1	32		
		and	From Novel to Film	1	32												
		experience	Introduction to Classical Music							_			_				
			Appreciation of classic movies			-		-		-		-	-		-		-
			The Theory of Justics									1	32				
10	Humanitie	Mora1	On Happiness: Positive Psychology							1	32						
12	s and arts	commitment and value	Freud, Jung and Adler														
		shaping	The Zen Culure														
			The Modern Progress of European Civilization											1	32		
			Public Policy of the United States			1	32										
		Social Change and	International Conflicts of Contemporary World														
		Civilization Dialogue	Fishing City and the Medieval History of the World														
1	1	1		 	1			-	-		-	-	-				
----	--	--	---	------	----	---	----	-----	----	---	----	---	----	---	----	---	----
			Economics														
			Public Policy and Urbanization Research of Chinese Society														
		Celebrity teacher	Famous Rostrum											1	32		
		lecture hall	Teacher class											1	32		
13	Philosoph y and Social	Scientific and Technologica 1 Progress and Scientific Spirit	Information Technology and Society									1	32				
	Sciences		Ethics in Life Sciences					1	32								
			A Brief History of Time														
			Mobile Internet and Technology Progress														
		Moral Education	Ideological Morality and Legal Foundation	1	32												
	Ideologic		Outline of Modern History in China							1	32						
14	al politics and ideologic al and	Ideological and political accomplishme nt	Basic Principles of Marxism			1	32										
	moral cultivati on		Introduction to Maoism and Theoretical System of Socialism with Chinese Characteristics					2	64								
			Situation and Policy	0	0			0	0			0	0			0	0
	Morral	Social and cultural practice	Military Theory and Training	1	32												
	Moral,		Physical Education I、II、 III、IV	1	32	1	32	1	32	1	32						
15	rnysical		Extension training					0.5	16								
10	anu		Competitive Sports													2	64

According to the "Internet of Things Engineering Professional Training Programme" (Annex B4) the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the respective Bachelor's programme:

Campus Activity and Social Practice

Art Accomplishment and Practice Modern Advertising

Volunteer Service

2 Expert knowledge requirements

Physical

Practice

Master the basic theory and basic knowledge of computer science and technology;

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- Master scientific thinking methods, engineering design methods and good engineering literacy;
- Master the knowledge and skills of IOT engineering, and possess the professional capabilities required by software engineers to engage in engineering practice;
- Master IOT system and application software analysis, design and development capabilities;
- Lifelong learning ability, information acquisition ability, ability to adapt to discipline development;
- Master a foreign language, with the ability to read and process professional foreign language technical data, and skillfully handle related English business documents;
- Master basic knowledge of humanities, natural sciences, engineering, and other basic disciplines;
- In the basic engineering design and practice and other aspects have a certain sense of innovation and ability;
- Train software teamwork and effective coordination skills to enable students to adapt and develop students with considerable organizational and leadership skills.

③Management capability requirements

- Master the basic theories, basic knowledge and methods of modern enterprise management, and master the qualitative and quantitative analysis methods of enterprise management;
- Master the skills and methods of modern business operation management and entrepreneurial management, with comprehensive capabilities in entrepreneurial design, project management and team management;
- Ability to work with enterprise management software;
- Gradually grasp the basic principles of the socialist market economy, law, and information
 industry and the basic knowledge of enterprise management, and be familiar with the
 policies and regulations of Chinese enterprise management and the practices and rules of
 international enterprise management.

④Comprehensive quality requirements

- Broaden his horizons, have a certain degree of scientific spirit and humanistic qualities, critical thinking; have a certain artistic accomplishment and aesthetic ability; have good team spirit and effective communication, coordination and cooperation; have the courage to innovation, will, perseverance and spirit;
- Strong basic analytical skills, writing skills, language skills, good communication skills and practical problems in solving corporate management problems;
- · Master the basic methods of document retrieval and data query, and have the ability to

search, collect, identify, judge, and use information materials for comprehensive analysis and management;

 Master certain basic sports knowledge and scientific basic physical exercise skills, have good physical exercise and hygiene habits, have a healthy body and good psychological quality, respect life, care for others.

5 Professional quality and ability requirements

The professional ability training chart is shown in Figure 1.



Figure 1 Professional capacity development chart

The following **curriculum** is presented:

numbe r	Module Name		course		S1		S2		S3		S4		S5		S6		S7		S8	
-	remo		Course Name	Typ e	СР	Hou rs	CP	Hou rs	СР	Hou rs	CP	Hou rs	СР	Hou rs	CP	Hou rs	CP	Hou rs	CP	Hou rs
	College	College English	College English I 、 II 、 III、 IV		4. 5	135	4. 5	135	4.5	135	4. 5	135								
1	English		Professional English(optional																	
		Mathematic s	Higher Mathematics Part ${ m I}$ 、 ${ m II}$		6	180	6	180												
	Subject		Linear Algebra				4	120			-	150							S8 CP CP	
2	ion	Physics	College Physics (A)				5	150			0	190								
	Module	111/3103	Physics Experiment (A)				0	100	4	120										
		Electronic	Electrical and Electronic						6	190										
		circuit	Engineering						0	100										
	_		Introduction to Computer Science		5	150														
3	Program ming module		C Language Programming		6	180														
	modulo		C++ Language Programming				5	150												
	Databas		Database Principles and Application						4. 5	135										
4	e System		Algorithm and Data Structure				5	150												
	Related Modules		Java Programming						6	180										
			Dynamic Webpage Development								4.5	135								
	Compute r		Computer Organization and Architecture								4	120								
5	hardwar		Embedded System Design										4.5	135						
	е		Microcomputer Principles and										4	120						
	Network		interface																	
6	and		Computer Network										4.5	135						
	operati		Linux Operating System										4	120						
	IoT		IOT Security Technology												4	120				
7	ring		IOT System Design												4	120				
	Technol ogy		RFID Technology								4	120								
	Module		Range Wireless Communication Technology										4	120						
			Java Comprehensive Experiment								1	30								
			Dynamic Webpage Development										,	20						
	Interne		comprenensive Experiment											- 30						
	t of		Embedded System Design																	
	Things		experiment													- 30				
8	g and		Algorithm Synthesis Design						1	30										
	Graduat		Internet of Things Perception Layer Experiment												1	30				
	Design		IOT Comprehensive Experiment							1							2	120		
		Graduation Project	Graduation internship														16	480		
9	Bachelo r Thesis		Graduation Project (Thesis)																30	900
10	Technol		Future Information Technology												3	90				

Curriculum Plan of Internet of Things Engineering

0 Appendix: Programme Learning Outcomes and Curricula

10	Big		Cloud computing and big data									3	90					
		Profession al	Mental health education for college students	<mark>0.</mark> 5	16													
		competence	College students'career development and employment			1	32											
11			guidance Workplace key capabilities									2	64					
	ional		College Students' Innovation and Entrepreneurship	1	32													
	literac y and		College Students' Innovation and Practice													2	64	
11	enginee ring	Leadership shaping	Human Resource Management									2	64					
	managem ent		Financial Management					2	64									
	ities		Marketing							2	64							
			Management Science											2	64			
		Executive	Organizational Behavior Corporate investment and											2	64			
		leadership elective	financing management											2	64			
		course	Modern Advertising											2	64			
			The Word Created by Socrates and Confucius with their Disciples							1	32							
		Humanistic spirit and	World Literature: Since 18th Century	1	32													
		life care	On Democracy of the United States															
			Russell and History of Western Philosophy															
	1									<u> </u>								
		10n expression	Creative Writing			1	32											
		and rational evaluation Art creation	Rhetoric and Logic	 				1	32									
			Persuasion and Reasoning															
			Classic Speech															
	cre aes <u>expe</u>		Musicals											1	32			
		and	From Novel to Film	1	32													
		aesthetic experience	Introduction to Classical Music Appreciation of classic movies															
			The Theory of Justics									1	32					
	Humanit		On Happiness: Positive							1	32	-						
12	ies and	Moral commitment	Psychology	 														
	arts	and value shaping	Freud, Jung and Adler															
			The Zen Culure															
			<u>The Zen Culure</u> The Modern Progress of European Civilization											1	32			
			The Zen Culure The Modern Progress of European Civilization Public Policy of the United States			1	32							1	32			
		Social Change and	The Zen Culure The Modern Progress of European Civilization Public Policy of the United States International Conflicts of Contemporary World			1	32							1	32			
		Social Change and Civilizati on Dialogue	The Zen Culure The Modern Progress of European Civilization Public Policy of the United States International Conflicts of Contemporary World Fishing City and the Medieval History of the World			1	32							1	32			

0 Appendix: Programme Learning Outcomes and Curricula

			Public Policy and Urbanization Research of Chinese Society															
		Celebrity teacher	Famous Rostrum											1	32			
		lecture	Teacher class											1	32			
13	Philoso phy and Social Science	Scientific and Technologi cal Progress and Scientific Spirit	Information Technology and Society									1	32					
	S	•	Ethics in Life Sciences					1	32									
			A Brief History of Time															
			Mobile Internet and Technology Progress															
	Ideolog	Moral Education	Ideological Morality and Legal Foundation	1	32													
			Outline of Modern History in China							1	32							
14	politic s and ideolog ical	Ideologica 1 and political accomplish ment	Basic Principles of Marxism			1	32											
	moral cultiva tion		Introduction to Maoism and Theoretical System of Socialism with Chinese Characteristics					2	64									
			Situation and Policy	0	0			0	0			0	0			0	0	
		1	1	 														 , ,
		Social and cultural	Military Theory and Training	1	32													

	Moral, Physica	cultural practice	Military Theory and Training	1	32											
			Physical Education I、II、 III、 IV	1	32	1	32	1	32	1	32					
15	Dimension		Extension training					0.5	16							
10	Physica		Competitive Sports											2	64	
	I Practic e		Campus Activity and Social Practice											2	64	
			Volunteer Service											2	64	
			Art Accomplishment and Practice											2	64	
			Modern Advertising													