PROGRAMME SELF-ASSESSMENT REPORT

For the Degree

BACHELOR OF OPTOELECTRONIC ENGINEERING

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Terminologies Used in the Report

Terminologies	Descriptions
Ministry of Education of the People's Republic of China (MOE)	Central Governmental Ministry responsible for education in China
Chinese Academy of Engineering (CAE)	National academy of China for engineering. Academician of CAE is the highest academic title in engineering science and technology in China.
Shanghai Municipal Education Commission(SMEC)	Local Governmental Commission responsible for education in Shanghai
973 Project	National project of “Key Fundamental Research Development Plan”
863 Project	National project of “High Technology Research and Development Plan”
211 Project	National project of “Developing 100 Advanced Universities in the 21st Century”
Cheung Kong Scholars Programme	This is a higher education development programme in China provided by MOE and the Li Ka-Shing Foundation. Started in 1998, it provides scholarship funding for famous professors from China and other countries to work in China.
Eastern Scholars Programme	This was launched by SMEC in 2007 with the aim of attracting about 50 leading professors from abroad for Shanghai every year.
Rising-Star Scholars Programme	This was launched by Shanghai Education Development Foundation to cultivating the young scientific talents in Shanghai.
Pujiang Talent Programme	This was announced by the Commission of Science and Technology of Shanghai and Shanghai Human Resources Bureau in 2005 with the intention to tempt young academics back to Shanghai
Outstanding Doctoral Dissertation of the Nation	About 100 dissertations elected by MOE get this honor in all disciplines each year.
National key Discipline	Elected Key Disciplines by MOE.
National top-quality Course	Elected by MOE. About 500 modules get this honor in all disciplines each year.
Top quality Course of Shanghai	Elected by SMEC. This stands for the high quality of the course.
Renowned Teacher of Shanghai	Awards for the outstanding teachers they are dedicating in the higher education career by SMEC.
Experiment Teaching Demonstration Center of Shanghai	Standing for the excellent conditions and organization for the experiments.

1 Formal Information

This programme self-assessment report is prepared for the bachelor degree of Optoelectronic Engineering offered by the School of Optical-Electrical and Computer Engineering (OECE) of University of Shanghai for Science and Technology (USST). It aims to introduce some information about the major of Optoelectronic Engineering from the aspects of training objectives, curriculum contents, examination regulations, related resources information, quality management and assurance measures. It should be mentioned here that the Optoelectronic Engineering bachelor programme is a Chinese education programme. Below is the formal information.

The School of Optical-Electrical and Computer Engineering (OECE) in USST was formally founded in the 1960s. The predecessor was “optical instrument department”. With the development of more than 50 years, OECE has accomplished an excellent achievement in USST and even influenced the nationwide engineering in this field. The success is credited to its long history and advanced academic level, for example the discipline of optical engineering has been elected as the national key discipline in the field of optical science.

Currently over 4,000 full-time students exist in OECE, including 3,000 undergraduate students, nearly 1000 master students and almost 100 doctoral candidates. OECE has more than 250 faculty members, including one academician of CAE (Prof. Dr. ZHUANG Songlin as the dean of OECE), 22 supervisors of Ph.D. candidates, 50 full professors and 70 associated professors.

OECE aims at the target of developing a highest quality of teaching and scientific research. For this reason, OECE has also hired a number of famous experts as part-time professors, forming an excellent, competent, and efficient teaching team to educate the future generations of our discipline.

OECE consists of Department of Optoelectronic Engineering, Department of Electrical Engineering, Department of Control Engineering, Department of Communication Engineering, Department of Computer Engineering and the Optical Electrical Experimental Demonstration Center for undergraduate students. OECE owns the National Quality Supervision and Inspection Center of Optical Instruments, the National Engineering Research Center of Industrial Processing and Automatic Processing, Shanghai Key Laboratory of Modern Optical Systems, and R&D Center of Optical Instruments.

OECE covers a broad spectrum of academic disciplines such as Optical Engineering, Instrument Science and Technology, Control Science and Engineering, Electrical Engineering, Information and Communication Engineering, Computer Science and Technology, Electronic Science and Software Engineering. Among them, the Optical Engineering as a national and Shanghai key discipline has the superior achievements compared to other disciplines. Its relevant research covers the academic fields including theory optics, opto-electrical technology, optical detection, optical instruments, optical fiber communication technology, biomedical optics, visual optics,

printing optical engineering etc. The center laboratory of Optical Engineering is also called Shanghai Optical Instrumental Institute, which has assumed a series of research projects including National Science Funding of China (NSFC) projects, “863 projects”, “973 projects” etc. The annual research funding in recent 3 years increased and arrived at more than 30 million RMB this year. Several scientific research awards have been achieved. For example we win the national invention award granted by the national education administration.

Optical Engineering discipline has a series of educational programmes from the bachelor, master, doctoral program until post-doctoral station programme, which provides a complicated and advanced education system for talents in optoelectronic and relevant academic fields. The major of “Optoelectronic Engineering” for bachelor degree belongs to and relies on the “Optical Engineering” discipline, which has the highest score with respect to student uptake among the total 11 undergraduate programs in OECE. It provides a good education possibility for the optical professional undergraduate. Optoelectronic bachelor program takes four years. It has about 500 undergraduate students. On one hand, the optoelectronic program focuses on the optical-electrical basic knowledge education and developing the students' innovation spirit. The students have more opportunities to be trained how to apply the theoretical knowledge to solve the practical and industrial problems. For example, more internship opportunities have been provided to those students. Several students have won the innovation competition awards. In addition, faculty members pay much attention to update the education content with regard to curriculum development. Many advanced and latest progresses in the academic fields have been introduced into the lectures. Moreover, many professional courses have been taught in bilingual or totally in English. Students have more chances to communicate with international colleagues, and learn how to have a good cooperation and how to exchange their academic ideas with international specialists. Many main courses of optoelectronic bachelor program have been awarded because of their excellence. For example, the course of “Optical Information Processing” won the national excellence prize for module construction project in 2008. The bachelor program of “Optoelectronic Engineering” totally has trained and introduced about 3,000 qualified optoelectronic bachelor graduates since its beginning in the 1960s. They have made great contributions to the social development and optical-electrical scientific and technology progress in this field.

1.1 Name and Contact Details

Name of programme: Optoelectronic Engineering.

The primary contact for the accreditation visit is Prof. YANG Yongcai. The alternate contact is Prof. Dr. ZHENG Jihong.

Their contact information is given below.

Table 1. Contact Information of Person in Charge

Persons responsible for the Bachelor programme	Prof. YANG Yongcai Prof. Dr. ZHENG Jihong
Address	School of Optical-Electrical and Computer Engineering University of Shanghai for Science and Technology 516 Jungong Road, Shanghai, P. R. China
Telephone	(0086) 021-55272982
Fax	(0086) 021-55274148
E-Mail	yangyc@usst.edu.cn jihongzheng@usst.edu.cn

1.2 Additional Master Programmes

There is a master programme Optical Engineering offered by the OECE in which graduates from the bachelor programme of Optoelectronic Engineering as well as graduates from other related or similar bachelor programmes can be admitted after they passed the entrance examination for master programmes. OECE also provides the opportunity for the doctoral degree in this discipline.

1.3 About Type and the Academic Degrees

It is a full-time bachelor degree programme. The OECE of USST awards the academic degree of Bachelor in Optoelectronic Engineering to the graduates of this programme.

1.4 Standard Period of Study and Credit Points Gained (According to ECTS)

The standard period of this programme comprises eight semesters. It contains modules covering 240 credit points altogether including internship and the final thesis.

1.5 Intake for the Programme

The programme begins since September each year.

1.6 Fees/Charges

The tuition fees account for 5,000 RMB per year, i.e. 20,000 RMB for the whole programme.

2 Degree Programme: Content Concept and Implementation

Since operational lasers were first demonstrated in 1960, the field of electro-optics has become an indispensable, rapidly expanding component of modern industry.

With the emergence of numerous medical and telecommunication applications in the 1980s, including fiber-optics, the field of electro-optics evolved into photonics, a broad field encompassing optoelectronics, micro-optics, lasers, digital imaging, spectroscopy, optical instruments and optical systems, and has grown in importance. Today photonics is not only a greatly developed technology field but also an enabler of nearly every other technology field, including micro technology, measurement and materials processing, remote sensing, photolithography for semiconductors, nanotechnology, electro-optics displays and imaging, biotechnology and national defense etc.

Rapid growth in the number and complexity of optics and photonics-enabled technologies has significantly increased the demand for technicians in optoelectronic fields, which is placing a growing and largely demand on professional education and training when at undergraduate. It is reported in a recent survey of employers that a trend represents a demand increase of more than 6 percent per year in this field. It can be concluded that optics and photonics will be an important technology-based economic driver of the 21st Century.

2.1 Training Objectives

The bachelor programme of “optoelectronic engineering” aims to cultivate high quality specialized talents with all-round development, who can also meet the needs of future national development and adapt to advances in technology. Through the education in this programme, they will master related principles as well as knowledge of optoelectronic engineering and receive good training for competent engineers for general optoelectronic project design, construction and management along with solid foundation of theory, sound basic scientific knowledge and outstanding ability of practice. Meanwhile, they will have the ability of continuing learning, innovation, coordination, team spirit and international perspective.

The graduates of this programme in future either will continue their studies in order to become scientific experts or will enter leading positions in industry or administration with abilities of research, design, development, application and management in the areas of photoelectric information technology, optical engineering, information science and technology. Even they can become experts in other related professional fields and disciplines because of effective learning in the university with the solid knowledge base and high education quality.

2.2 Learning Outcomes of the Degree Programme

This bachelor programme includes the learning outcomes as below:

1) The student should have developed the team spirit and social competence.

- Students should understand Chinese history, Chinese law, Chinese ethical and social responsibilities, and Chinese social system through learning the Required Courses of the Ministry of Education of P.R. China including outline of Chinese modern and contemporary history, ideological, moral cultivation and basic Law, socialism theory system introduction and some other related courses.
- Students should have the ability to be productive in a multi-disciplinary team like social investigation during summer holidays, and to take part in the social activities through accepting the practical education and training.
- Students should learn to apply the theoretical knowledge into practical excise through visiting the industrial factories like some manufacturing companies that have cooperation with our college.
- Students should learn how to keep good cooperation with colleagues and to develop good personality and characteristics through participating in all kinds of competence teams such as mathematical contest in modeling, computer programming competition, and experimental groups that require two or three students to finish the experiments jointly.

2) The student should have developed international communication ability and had the competence for international cooperation and employment for international companies.

- Through the basic college English learning and training, most bachelor students should have passed the College English Test Band 4(CET-4) which is organized by MOE. What's more, university provides all kinds of chances to practice and improve students' international communication ability, just like exchange students project, especially USST has the International Cultural Park-USST that includes 6 centers like German center, American center, British center and so on and students could take part in all kinds of activities to broaden their minds and horizons.
- Students can improve their technique English especially about opto-electronics and some content related to their major through participating in bilingual curriculum such as Nanometrology and Optoelectronic Principles. Students could take part in some international seminars and academic conferences that invite most famous foreign scholars for academic exchange to improve students' professional English and most importantly expand their knowledge for international frontier.

3) The student should have learned the college physics and advanced mathematics, so that they have broad education in natural science.

- Students should have knowledge of mathematics, physics and basic mechanical knowledge through learning some courses including basic mathematics A,B and college Physics. In order to cultivate students' practical ability and deepen the understanding

of course content, students need to participate in college physics experiment and do some experiments related to teaching contents by themselves.

- During the study, students learned how to apply the knowledge to solve the practical engineering problems especially the opto-electrical industrial filed. Teachers organize competitions such as mathematical contest in modeling except the regular courses teaching.

4) The student should have developed the professional skills in scientific computer and its application field.

- To receive the broad education in computer science and engineering skill, the students have to learn the courses like information technology, programming languages such as C, C++, and Java according to their interest and most courses have corresponding practical courses, which require students do some experiments and write program using computer languages.
- Students could learn how to solve engineering problems and apply computer knowledge to optic-electronic design through some related courses like advanced program development and application that are very practical courses and closely related with optic-electronic design.

5) The students should have developed good ability of working in optics, optical system design and advanced optical technology based on their broad education in optics and related electrical technology.

- They have learned the knowledge of theoretic optics and applied optics, as well as the knowledge of optic-electrics and advanced optics through learning the basic courses in opto-electrical fields like optical engineering, optoelectronic principles, laser technology etc.
- The students should have the ability to design, conduct and evaluate the results of optical, optic-electronic and optical-related systems. For example, they have to learn the optics system design and can use the computer aided software like ZEMAX, CODE-V, and Lighttools to help design and evaluate the optical system. They also have to do the individual team experiments in almost all of the corresponding courses, including some advanced technology development in this filed, such as applied optics, optoelectronics, optical design and optical communication.
- The students should have the competence to formulate and solve engineering problem within optical and photo-electrical field. On one side, doing experiments cultivate the ability of solving the problems in practical system. On the other side, the students can join the professor’s reach group and focus on some specific topics during their spare time.

6) The students should have broad education in electronics, electronic circuits and the related advanced measurement and controlling technology.

- The students should have the knowledge of the basic electronics, advanced technology within electronic field and the ability to design, conduct and evaluate general circuits system within practical optic-electrical system. Students should complete some electronic experiments about analog electronic technology, digital electronic technology, circuit principles and so on.
- Students should have the ability to formulate and evaluate the processing and results in the electronics, measurement and controlling aspects and solve engineering problem within the optic-electrical system. During the summer holidays, short term learning focus on the electrical design training like Protel, Auto CAD, and internship including some electrical industrial companies like Keyuan Company, which can provide all kinds of chances for students to train their practical ability to solve problems.

7) The students should have broad education in opto-electrical engineering and information engineering with in depth education in selected topic.

- Students should have knowledge of advanced technology within the optical-electrical and information engineering field and primary ability to solve the complex tasks of advanced optical-electrical system through learning elective courses including image processing, photovoltaic technology, measurement and control circuits, infrared technology etc. Students can select any courses they are interested in and improve their understanding to some advanced technology.
- College invites famous scientists and outstanding professor to give speeches for faculty and students. They have to attend these invited talks and then write report about they learned.
- Students have the ability to take part in the research group according to their interest such as black silicon, Terahertz, thin film etc. Students can write patents and publish papers using what you learned.

8) They students should have development of thinking creatively and researching sources of information for the purpose of solving engineering problems.

- Students should have the ability to put the theoretical knowledge they have learned into practice through the internship. They have 15 weeks of internship in optical or electrical companies or industries. Students could find internship places by themselves or go to the practice base, for example, practice base provides good conditions for students and has tutors during internship period. They have to take part in the real processing of fabrication products including design, fabrication, improvement, even sales.

- Students have chance to work individually through final bachelor thesis. Students should have the ability to design a system, component, or process using the basic knowledge they learned during more than three years. They could select many kinds of interesting topics according to their interest and finish one final thesis during 12 weeks.

2.3 Modules Objectives

The module handbook in Appendix B comprises all syllabuses with detailed description for the programme. The compulsory modules are fixed in curriculum and executed in a reasonable order. Additionally, the curriculum includes elective modules, those are intent to the development of the respective specializations (Appendix E: Curriculum). The objective of elective modules serves as the professional consolidation and possibility to personal focus education. The syllabuses of selective modules are also exemplarily described in module handbook.

Table 2. Objectives Matrix for Optoelectronic Engineering

Objectives Matrix for Optoelectronic Engineering		
Superior learning objectives	**Intended learning outcomes for the programme as a whole** **-Knowledge** **-Skills** **-Competences**	**Corresponding Module/Module Objectives**
Development of team spirit and social competence	Ability to be productive in a multi-disciplinary team Understanding of ethical and social responsibilities Applying the theoretical knowledge into practical excise Learning how to keep good cooperation with colleagues Cultivating good Personality and characteristics	Required Courses of the Ministry of Education of P.R. China Practical Education, Practical training etc.
Development of intercultural competence, competence for international employment	Ability to present ideas in writing, expressing orally, and to communicate effectively in international environment	College English, technique English, some international seminars
Broad education in natural science and mathematics	Knowledge of mathematics , physics and basic mechanical knowledge Ability to apply nature and science knowledge to solve engineering problems	Basic Mathematics A,B College Physics
Broad education in Computer Science and Engineering Skills Development of professional skills in the scientific computer and its application field	Knowledge of engineering sciences and engineering design to solving engineering problems Ability to apply computer knowledge to optic-electronic	Computer Science Engineering Skills

	design	
Broad education in optics and related advanced optical technology Ability for development work in optics, optical system design and advanced optical technologies	Knowledge of theoretic optics and applied optics Knowledge of optic-electrics and advanced optics Ability to design, conduct and evaluate the results of optical and optical-related systems Ability to design and evaluate the optical and optic-electronic experiments and related systems Ability to formulate and solve engineering problem within optical and photo-electrical field	Optical Communication Laser Technology Optoelectronics Modern Optics Technical Optics
Broad education in electronics, electronic circuits and the related advanced measurement and controlling technology	Knowledge of the basic Electronics, advanced technology within electronic field Ability to design, conduct and evaluate general circuits system within practical optic-electrical system Ability to formulate and evaluate the processing and results in the electronics , measurement and controlling aspects Ability to formulate and solve engineering problem within the optic-electrical system	Basic Electronics Electric Circuits Microcontroller Measurement and Sensor
Broad education in opto-electrical engineering and information engineering with in depth education in selected topic	Knowledge of the advanced technology within the optical-electrical and information engineering field Primary ability to solve the complex tasks of advanced optical-electrical system	Specialties Optoelectronic (Elective)
Development of thinking creatively and researching sources of information for the purpose of solving engineering problems	Ability to work independently Ability to design a system, component, or process	Final Thesis Enterprise Practice

2.4 Job Market Perspectives and Practical Relevance, Research Orientation, Internship, Interdisciplinary Cooperation

After the invention of laser in 1960, the worldwide optoelectronic industry develops very quickly. Especially within the past 15 years, the domestic optical engineering industry including the laser

Processing, LED, communication device, and the wireless sensor etc., rise dramatically by annual 15%. The talents majored in optoelectronic engineering are highly demanded recently in Shanghai and other Chinese cities, even in the whole world job market.

On one aspect, as an important way to absorb knowledge, guest lectures have always been taken seriously in our school. In order to further broaden working opportunities, many famous and successful alumni and experts are often invited to give lectures to introduce their successful experience for our students, which provide students good opportunities to know more about the future work even during their undergraduate period. What's more, our school always organizes international and domestic academic seminars and workshops to provide more chances for the students to contact with enterprises from industry.

On the other hand, the students in this programme should participate in the industrial internship outside the university. They can apply the knowledge into the practical industry and get more practical training through this cooperation. The OECE has longterm cooperation with some famous companies in the industry like the SHANGHAI JINGKE Group (precision and scientific instrument), Shanghai Gaojing Company, etc. Moreover, we have established coverage of all professional satisfied internship training base successively within the Shanghai Industrial Automation Instrument Research Institute, Golden Family Group, Shanghai General Machinery Company, Shanghai Wide Extension of Information Technology Ltd., Ding Jie Software Ltd. by Share Ltd. and other 36 enterprises. They provide internship positions for the undergraduate students. The long-term stable cooperative relationship between USST and companies bring the benefits for both sides and put forward the development of the optoelectronic industry. On this basis, OCEC has established the employment and entrepreneurship internship bases with the industrial partners for more practice-oriented opportunities that favor the students and faculties.

The college continues to expand the level of personnel training, improve the personnel training system and cultivate high-level talents with innovation spirit and ability in the field of optoelectronics in order to meet the needs of optical technology development and needs of promoting optical industry technology. According to the employment data in recent years, part of graduates participate work in the institute, part of graduates in the state-owned enterprises or private enterprises and there are still some students choose to continue their studies at home and abroad. They are mainly engaged in research, research and development, sales and so on.

2.5 Admissions and Entry Requirements

2.5.1 Requirements

2.5.1.1 Entrance requirements of the Bachelor's degree pursuing

Students applied for tertiary education entry in USST need to meet the Article 19 of Higher Education Law of the People's Republic of China. That is to say, graduates of senior secondary school education or those with equivalent educational level shall, upon passing the National

Higher Education Entrance Examination(NHEEE), be admitted by institutions of higher learning imparting corresponding curricula education, and obtain the qualification for admission as undergraduate students.

USST belongs to one of the famous universities with a long history of more than 100 years in China. Therefore, the annual enrollment score ranks relatively high. That means, only the students with college entrance examination achievement of first-class are admitted to study in USST. According to the major wish list, the optoelectronic engineering is one of the best and one of the hottest major willing among all of the freshman. Since the number of the places for uptake students is limited and the number of applicants is larger than the limit of enrollment, only the students with the highest scores will be finally enrolled into our major at the last.

2.5.1.2 Performance of the entrance procedure

Colleges and universities in China could be classified into three levels: the first level include nearly 40 colleges or universities sponsored by Project 863, they are also called as national key universities. The second levels include nearly 100 mainly administered by provinces or municipalities as key universities. USST is one of the key universities of Shanghai. The third levels are called as regular universities administered by provinces' government. Colleges and universities in first or second level have the priority to choose candidate students with higher scores in National Higher Education Entrance Examination (NHEEE).

Almost all applicants need to take the NHEEE after their 3-year high school study. Then they could choose some universities or colleges as their application target according to their scores. The national key universities always choose candidate students at first. Then it's the turn of universities or colleges at second level and with third level followed.

There are several examination systems in China like "3+x" or "3+1+x" or "4+x" and so on. Different provincial-level educational authorities could choose different system as their NHEEE models. "3+x" is a pilot examination system implemented in most provinces. Where "3" refers to compulsory subjects, including "Chinese, Mathematics and English", and "x" means that students can choose, according to their own interests, one or two subjects from either arts subjects (Politics, History and Geography), or science subjects (Biology, Physics and Chemistry). The maximum score for this system is 750 (two subjects in "x" are chosen). "3+1+x" is different from "3+x" with a comprehensive ability test added. It's mainly implemented in Shanghai and its full score is 630.

The admission cutting score is different from year to year or province to province since the number of applicants is different but the admission quota for each province is usually fixed. Most students will take the university level and its located city as the first tips for choosing a university. So as a key university in Shanghai, USST can have better student resources. Regarding to our professional characteristics, applicants with better performance in Physics always taken more favor.

All students could visit their interested university and consult the undergraduate admission office for any questions about the university or application before submitting their university or college preferences list.

2.5.1.3 Suitability check

The whole admission procedure is official and transparent and under the supervision of public. The admission cutting score is announced through media such as TV, internet or newspaper. Applicants or anyone who have interest could look up the enrollment information or admission notice or admission process about universities and colleges through websites. Applicants could also ask for verification from Shanghai municipal administrators or even the State Education Commission when they find unjustness.

2.5.1.4 Implementation and previous experience with the entrance method

Since 2000 students in USST could apply for changing major after first year study. As a leading major in USST, Optoelectronic Engineering always has a long waiting list every year. Students who have better performance in physics and mathematics in first year's learning will be considered at first.

2.5.2 Enrollment

Students applied for this study programme should meet the advanced Education Law of the People's Republic of China and pass the University Entrance Examination, and have the interest to work in the area of optoelectronic. About 120 students per year are enrolled.

2.5.3 Employment Targets

Graduates from this program with a solid basic knowledge of optics, electronics and computer applications will find employment opportunities in different branches of industry and business, in particular related to optical and optoelectronic products, optical communication and information technology.

2.5.4 Requirement of society

Since optoelectronic technology has increasing importance for the proper function of modern society, and the demand of optical information industry for qualified experts increases correspondingly, this study program fulfills an essential requirement for the prosperous development of the Chinese society.

2.6 Curriculum/Contents

The detailed Curriculum "Optoelectronic Engineering" scheme is shown in Appendix D.

3 Degree Programme: Curriculum/Content, Structures, Methods and Implementation

3.1 Structure and Modularity

3.1.1 Curriculum/Content

According to the ASIIN curricular structure memorandum clause FEH 05, for majors like technical physics, modules included in curricular plan of optoelectronic Engineering could be divided into five types as following:

- Math.-naturwissenschaftliche Grundlagen (MNG), i.e. math and other Natural Science Fundamental modules including Basic Mathematics A,B and physics aims to cultivate broad education in natural science and mathematics.
- Fachspezifische Grundlagen (FG), i.e. major basic knowledge modules including computer science module, microcontroller module, technical optics module, electronics module and electric circuits module aims to improve professional basic content.
- Fachspezifische Vertiefung (FV), i.e. professional knowledge modules including optoelectronics module, laser technology module, optical communication module, modern optics module, measurement and sensor module, specialities optoelectronics module, practical education module aims to deepen professional knowledge.
- Übergreifende Inhalte inklusive betriebswirtschaftlicher Grundlagen (Üb), i.e. Cross Curriculum from other majors including required courses of the Ministry of Education of P.R. China and general courses module aims to improve students' knowledge about Chinese history, Chinese law etc. and international communication skills.
- Abschlussarbeit (Ab), i.e. Graduation project including bachelor thesis aims to cultivate students to design a system, component, or process independently.

Table 3(a). Bachelor Programmes: Optoelectronic Engineering OE

Bachelor Programmes: Optoelectronic Engineering OE				
Teaching Hours - Credit Conversion Formula: 16 teaching units per semester = 1 Chinese credit = 1 teaching hour per week (German = 1 to 1.5 ECTS)				
Module Name	**Courses**	**Teach. Hrs.**	**ECTS**	**Percent**
MNG				
Basic Mathematics A	Linear Algebra	32	2	5.83%
	Calculus (1-2)	192	12	
Basic Mathematics B	Stochastic (Prob. and Statistics)	48	3	2.08%
	Compl. Funct. Integr. Tr.	32	2	
Physics	College Physics A (1-2)	128	8	4.17%
	College Physics Experiment (1-2)	36	2	
FG				
Computer Science	Information Technology	32	2	7.91%
	Information Technology Experiment	16	1	

	Programme Design and Practice(C)	48	4	
	Programme Design and Practice(C) Experiment	16	1	
	Advanced Programme Development and Application B	32	2	
	Advanced Programme Experiment	16	1	
	Engineering Drawing Foundation (1-2)	96	8	
Microcontroller	Microcontroller and its Application (1-2)	128	8	6.25%
	Microcontroller I Experiment (1-2)	48	3	
	FPGA and its Application	32	2	
	Microcontroller II Design	2W	2	
Technical Optics	Optical Engineering (1-2)	128	8	5%
	Lab. Applied Optics (1-2)	32	2	
	Optical system simulation with Software	32	2	
Electronics	Analog Electronic Tech.	64	6	6.67%
	Digital Electronic Tech.	64	6	
	Lab Analog Electronic Tech.	32	2	
	Lab Digital Electronic Tech.	32	2	
Electric Circuits	Electrotechnics Foundation	48	4.5	
	Circuit Principles (1-2)	96	6	5.21%
	Lab Circuit Principles (1-2)	32	2	
FV				
Optoelectronics	Optoelectronic Principles	64	4	4.17%
	Optoelectron. Devices	64	4	
	Lab Optoelectronics	32	2	
Laser Technology	Laser Technology	64	4	2.5%
	Laser Lab.	32	2	
Optical Commun.	Fiber Optics and Opt. Comm.	64	4	2.5%
	Lab. Opt. Comm.	32	2	
Modern Optics	Optical Information Processing	64	4	4.58%
	Computer aided Optical Design	48	3	
	Lab. Optical Design	2W	2	
	Academic Seminar	32	2	
Measurement and Sensor	Signals and Systems	64	4	3.33%
	Nanometrology	32	2	
	Weak Signal Detection	32	2	
Specialities Optoelectronics. (Elective)	Image Processing	32	10	4.17%
	Photovoltaic Tech.	32		
	Measurement and Control Circuits	32		
	Infrared Technology	32		
	Thin Film Technology	32		
	Modern Illumination Technology	32		
	Optical Information Network	32		
	Integrated Circuit Manufacturing Tech.	32		
	The Photoelectron Emitting and Display	32		
	Biological Optical Measurement	32		
Practical Education				
Metalworking Practice		3W	3	17.92%
Internship		15W	26	

Seminar on Internship		32	2	
Lab. +Workshop Train.		48	4	
Student's project		4W	8	
Final Thesis				
Bachelor Thesis		12W	16	6.67%
Required Courses of the Ministry of Education of P.R. China				
	Politics and Sociology	176	5.5	4.79%
	Military Training	2W	1	
	Military Knowledge	32	1	
	Optional Individual Sports	128	4	
General Courses				
	English language	352	11	6.25%
	other general modules	64	4	
Sum			240	1

Table 3(b). Contrast Percentage of Each Module between ASIIN and USST

Module	ASIIN	USST
MNG	20%	12.08%
FG	25%	31.04%
FV	30%	39.17%
Ub	10%	11.04%
Ab	7%	6.67%
Flexible	8%	

Remarks:

Table 3(a) gives the list of modules name and the percentages of credit points for each module. A comparison between the reference percentage values annotated in ASIIN memorandum for each module type and the percentage values of our programme, is given in table 3(b). There is a reasonable agreement in the distribution of the percentage values among the different module types. Larger differences only appear in the module types MNG and FV : FV has a higher percentage and MNG has lower percentage in our case. This mainly results from the inclusion of internship credits within the FV and the subordination of some basic courses into FG instead of MNG. These differences are considered to be tolerable from our point of view since the beginner students enrolled in this programme usually have a sound basic knowledge in MNG but a lack in practical experience.

3.1.2 Structure

There are four academic years for the undergraduate study in this major. With the requirement of USST, the first year should focus on Natural Science Fundamental knowledge such as advanced mathematics, college physics and the Cross Curriculum from other majors like college English or sports. Internationalization is the dominant direction for undergraduate education in China, so there are 8 compulsory credits requirement on English and related culture modules. There is a military training for the freshmen because most students ignored physical fitness exercises since they have to preparing for the National Higher Education Entrance Examination

before entering universities. The target of military training is to help students to reform a good habit of physical exercise. And after the training, students could choose other individual sports items like table tennis or basketball or yoga etc. Social and cultural knowledge is also important content in first year.

FG modules mainly start from the 3rd semester. FG modules include the basic knowledge in Electronic Engineering, computer technology and optical technology. Professional modules generally appear after the 4th semester when some necessary preliminary knowledge had been finished before them. And most FG modules are arranged before FV. FV modules aim at the professional knowledge about optics and photoelectrons. Many optional modules are provided for the deepening and fashion knowledge in 5th and 6th semesters. In this way, Students could choose one research direction as his deepening learning if postgraduate education is expected in future or he could just expand his professional knowledge if a job is in his plan after graduation.

To be consistent with our education target, our education laid special emphasis on practice of professional knowledge. Most modules in FG and FV have experiments or practical projects besides theory learning through classroom teaching. The 7th semester is arranged as the semester of Practices on Professional skills. That means all students are required to take part in the practices for at least 14 weeks before graduation project. We have some long-term co-operative enterprises that could provide practice opportunities for about 60 students every year. Students could choose to join the research projects of their professors in USST or they could find internship by themselves.

The 8th semester is for graduation project. Students could choose one professor in major as his/her supervisor for help. The project topic could come from his/her Intern Company or the supervisor's research. The detailed course module is listed in Appendix B.

3.2 Workload and credit points

In China, duration for one lesson is 45 minutes and each credit corresponds to nearly 16 lessons on class or in lab. The extracurricular self-study time for each lesson is almost double of class. So transferring into ECTS (European Credit Transfer System) credits, it is 60 ECTS credit (27 hours per ECTS credit) or 1620 hours for study for one academic year.

3.2.1 Workload/Scope in contact hour, credit point and self-study

The detailed workload and credit points for all modules are listed in Appendix D "the undergraduate programme of optoelectronic engineering". The credit points in Appendix D have been transferred to European Credit. One credit point in Chinese teaching system corresponds to 16 teaching lessons and each teaching lesson is equal to 45 minutes, while one ECTS credit requires students to study for 27 hours including 12 hours for teaching and 15 hours for self-study. For the general courses, one ECTS credit requires 16 teaching lessons, i.e. 12 hours, as shown in Appendix D, while one ECTS credit in some courses like physical education corresponds to 32 teaching lessons for the reason that these courses are relatively easier to learn and there is

less self-study time and almost all lessons are for teaching in class. And one ECTS credit in some courses like Engineering Drawing Foundation (1-2) corresponds to 12 teaching lessons for the reason that these courses require much more time for self-study. And one ECTS credit in some courses like College Physics Experiment (1-2) corresponds to 18 teaching lessons for the reason that these are experiment courses and require much more time in class for doing experiment. Since the credit system requirement, there are many optional modules listed in modules table, so the total credit hours seem to be very much. Because of the USST tradition, the absolute hour for each credit hour is 45 minutes, so the credit hour is 20 per week per semester. In addition, there are 14 weeks practical training at 7th semester and a graduation project at 8th semester. Following is the statistics table for all credit hours in 4 years.

Table 4. Statistics for All Credit Hours in 4 Years

	Contact hours	Self-study hours
Total workload hours without practical training and graduation hours	2343	2544
Total Credit hours for required modules	2919	3291
Total credit hours for optional modules	120	150
Total credit hours for professional or nature science knowledge learning	1755	2416.5
Total credit hours for non-professional knowledge learning	588	127.5
	12 hours per ECTS credit	15 hours per ECTS credit

3.2.2 Credit Pointing System

Each learning outcome is expressed in terms of credit points, with a student workload ranging from 1,500 to 1,800 hours for an academic year, and one ECTS credit generally corresponds to 25-30 hours of work. In this selfstudy report, one ECTS credit corresponds to 27 hours.

3.3 Educational Methods/Didactic Concept

Large class is applied in most MNG modules because of their theory teaching characteristics and also the reality of too many students with fewer teachers since MNG modules is oriented to all undergraduate students. Students will be scattered into small classes with about 30 peoples in each for a FG or FV course through selection of teacher. For laboratory modules, students are always divided into small groups to ensure a better teaching effect. The high education quality for this major is obvious, since 2005,we have two FV modules named as the National Quality Curriculums and three FV modules named as Shanghai Quality Curriculums. Our teaching group got the Education award of Shanghai of 2009.

Classroom is the still the main battlefield for teaching but it’s absolutely not the only one. Laboratory is also important place for our undergraduate education. Nearly all modules in FG and FV have experiments or practical projects contents. We have a key laboratory of Optical engineering in Shanghai, which is also one of the key laboratories affiliated to the National optical instruments for quality supervision and Inspection Center and National Optics and

photonics Standardization Technical Committee, so our students enjoy a real good experimental condition comparing to other similar majors in other colleges or universities.

To be consistent with our education target, our education laid special emphasis on practice of professional knowledge. Most modules in FG and FV has experiments or practical projects besides theory learning through classroom teaching. The last year is arranged as the semester of Practices on Professional skills. That means all students are required to take part in the practices for at least 14 weeks and a graduation project. We have some long-term co-operative enterprises that could provide practice opportunities for about 60 students every year. Students could choose to join the research projects of their professors in USST or they could find interns by themselves.

Network teaching is widely used in undergraduate education. Most of the FG & FV modules have their special course websites on USST campus network. Students could download the lecture outlines or ask questions directly on web or send email for questions. Many professors have office hours in each week for undergraduate students or leave an email address for questions. The communication between teachers and students through internet chat tools such as MSN or QQ (a popular chat tool in China) is also common in today.

3.4 Support and advice

The school of optical-electrical and computer Engineering (OECE) has more than 4,000 undergraduates, the major of optoelectronic engineering has 500 undergraduates, including 4 grades, each grade has 125 students. The student counselor is a indispensable part of the entire school staff. Student counselors' job is to help create a healthy, safe, and vibrant campus environment in order to facilitate students to gain experience in life, to help students complete their studies and to develop interpersonal and leadership skills. Thus, the college provides every grade with 3 full-time counselors.

Counselors will introduce the professional development status and corresponding variety of vocational to the freshmen to help students establish a correct career aspiration, think and design career planning initially. Thus, students can consider their future career development in the first day of enrollment in universities. For the sophomore and junior students, counselors help them to rationally adjust the career planning, design and improve the relevant competitive power for the graduate employment choice preparation in advance. And for the graduates, counselors provide them the latest information of employment and help them to improve the interview skill as well.

Moreover, OECE has built up a student affair center for the undergraduate in order to give them comprehensive guidance and service on life, study, employment and community activities etc. Student affair center services the students within the following working fields:

- Guidance for learning: guidance for selecting course, communication activities for exchanging the excellent students' learning method, study experience;

- Guidance of Daily life : time management education;
- Organization of students' spare time community activities: for example, Wushu association, dance association and so on;
- Organization of scientific innovation and competition activities: for example National Electronic Innovation Competition, Mathematical Modeling Contest and so on;
- Organization of Alumni association: inviting famous Alumni majored in optoelectronic engineering give the lectures for the undergraduate students to introduce their successful experience; and organize the practicing activities within social summer practical survey, famous alumni forum;
- Internship employment guidance: arrangement for contact practice base, career oriented.

In addition, the school implements tutor system for undergraduates and provides every student with Bachelor's degree supervising professor through the way of mutual choice. There are 30 professors involving this job. During the learning life, tutors will guide students to develop their own research direction according to personal hobbies and interests. Tutors can give students constructive suggestions when they encounter difficulties whether in study or in life and teach students how to play their own advantages in the teamwork. The undergraduates participate scientific research directly and give students effective and professional support and consulting for their academic development and career planning.

4 Examinations: System, Concept and Organization

4.1 Exam Method

Courses examination should preceded according to USST examination regulations. It is all acceptable that the examination form be written, oral, experimental or documental report in accordance with regulations “USST course examination regulation for fulltime undergraduate students”.

4.2 Exam organization

There is a complete learning and examination management system in university of Shanghai for Science and Technology. Following is a list of related documents for learning rules and examination regulations in USST. The specific examination regulations are shown in Appendix E.

- University of Shanghai For Science & Technology’s Rules of Curricular Examination for Full-time Undergraduate Students
- University of Shanghai For Science & Technology Rules for Taking Attendance of Full-time Undergraduate Students for Their Study Work
- University of Shanghai For Science & Technology’s Draft By-laws of Curriculum Exemptions for Full-time Undergraduate Students
- Provisional regulations of Shanghai for intercollegiate minor modules study of fulltime undergraduate students from colleges and universities at northeast
- University of Shanghai For Science & Technology’s Student Code of Conduct in Examination Rooms
- University of Shanghai For Science & Technology’s Regulations for proctors
- University of Shanghai For Science & Technology’s Management Regulation of Examination Papers

There are some detailed English documents corresponding to the above files as shown in Appendix F.

5 Resources

5.1 Institutional Environment, Financial and Physical Resources

5.1.1 Description of the Institution

5.1.1.1 University of Shanghai for Science and Technology

The origins of the University of Shanghai for Science and Technology (USST) extend to the beginning of the 20th Century back, it is from the 1906 University of Shanghai, founded in 1907 and founded Tongji German School of Medicine emerged. She has since become one of the leading Universities in Shanghai with the engineering developed as a priority; addition, the natural sciences disciplines, business and economics, Humanities and cultural studies and law represented. The university will include 15 colleges, 2 departments and 30 research institutes. A total of 15,600 Students in bachelor's degrees and postgraduate students in 3800 Courses enrolled. In the above- mentioned fields 56 Undergraduate programs, 81 master programs and 36 doctoral and "Post - Doc" -Programs offered, including some elite programs (11 in the master section and 3 in the promotion area). Meanwhile, the USST the international Cooperation in higher education and forced more than 10 international Academic partnerships with universities in Germany, USA , USA , Japan , Switzerland , Russia , Australia, Ireland and Hong Kong set up.

The University of Shanghai for Science and Technology (USST) can look back on a hundred -year history. In 1907 She was foundered by the Hamburg Erich Paulun as the "German School of Medicine for Chinese in Shanghai"(which also developed the Tongji University), and in 1906 by the American Baptists, Dr. Robert Thomas Bryan and Dr. John Thomas Proctor established "Shanghai Baptist College". Later it developed into Shanghai University (existed until 1952). It is a multidisciplinary university, the professionally trained graduates in engineering, economics, natural sciences, literature, enjoyed medical technology, art and political science.

In May 1996, under the jurisdiction of the Shanghai Education Commission, the former East China University of Technology and the Shanghai Institute of Mechanical Technology merged into a new university. In September 1998 the former Department of Mechanical Engineering has been completely transferred to the Chinese Ministry of Education and to the Shanghai Education Commission. The USST is now one of the key universities in Shanghai. In 2004 two more colleges, the Shanghai Medical Instrument College and the Shanghai Printing and Publishing College, joined USST.

The current USST consists of 15 schools, 30 research institutes, 12 research centers and three academies at six locations in the Jungong Road, Fuxing Road, Yingkou Road, the Shuifeng Road, and Nanhui District together. At the USST 56 undergraduate degree programmes and three posts -doctoral programmes are offered. Furthermore, there are 30 PhD and 59 master's programmes, including 11 programmes in School of optical-Electrical and computer engineering. Currently, about 20,000 students enrolled, of whom approximately 4,000 masters students and 300 doctoral students.

A total of 2,300 employees are working at the USST in teaching and administration. Of the 1,200 teachers are 469 professors and associate professors. The USST has 6 Members of Chinese Academy of Engineering and the Chinese Academy of Science. The dean of school of optical-Electrical and computer Engineering, Prof. ZHUANG Songlin is a senior number of Chinese Academy of Engineering.

5.1.1.2 The School of Optical-Electrical and Computer Engineering (OECE)

The major of “optoelectronic engineering” and the Optical-electrical engineering college has a long history since 1952. The history and development processing is listed in Table 5.

Table 5. History and Development Processing of Optoelectronic Engineering

Year	Professional development and academic support
1960	Established undergraduate majors of “Optical Engineering”----major of “Optical instrument” (The first major of “Optical instrument” in China was established in Zhejiang University in1952, “optoelectronic engineering” of our school joined into the first batch of established college)
1981	Offered master programme of “Optical Engineering”, later, which transformed to first level discipline of " Optical Engineering”
1994	“Optical instrument” was integrated and adjusted to “Optical technology and photoelectric apparatus”, and belonged to major of instrument.
1998	Defined the recruitment for "Optical Engineering" among the major of "Electronic and Information Engineering" and "Control Technology and Instrument" distinctively.
1998	Established doctoral programme of “Optical instrument”, later transformed to first level discipline
1999	Became unit of the teaching guiding committee for college optical-electrical information science and engineering majors under the Ministry of Education
	Academician ZHUANG Songlin joined into our school, and became academic leader of " Optical Engineering”
2000	"Optical Engineering” was selected to the key disciplines under Educational Commission of Shanghai
2005	"Optical Engineering” was selected to the key disciplines of Shanghai
2005	“Moderns Optical Systems” became Shanghai key lab, got many high marks in evaluations from then to now, and now, applying for the national key lab
2005	Set up of the "Optical Engineering" academic subject made USST, became the first college to recruit undergraduates majoring in optical engineering in shanghai. Established post-doctorate position of " Optical Engineering”
2007	Established the postdoctoral research station of “Optical Engineering”, at present, 3 post-doctors had graduated
2007	“Optical Engineering” became the national key discipline(cultivating)
2008	“Optical Instrument and System” was granted of Engineering Research Center under the Ministry of Education
2008	The “Optoelectronic Technology Experiment Center” has been approved as the undergraduate education demonstration experiment center of Shanghai, and it is being applying for the national now.
2008	Got the subject of “Undergraduate education center of Shanghai(the third issue)”
2009	A doctor majoring in “Optical Engineering” who guided by Academician ZHUANG Songlin got the honor of “Outstanding Doctoral Dissertation of the Nation (top 100 doctoral thesis)”
2010	“Optoelectronic Engineering” was granted of the Second kind of national characteristic

	specialty

Presently, the School of optical-electrical and computer Engineering (OECE) has more than 4000 undergraduate, 900master and near100 doctoral students. Among the 250 teachers there are 50 full professors (including 22 doctoral tutors and one member of the Chinese Academy of Sciences) and 70 Associated Professors. Eighty-seven percent of these full-time teachers hold graduated degrees.

OECE has two doctoral programs, 3 first-degree and 7 secondary master's programs, 3 engineering master's programs and 11 bachelor's degree programs (Electronic Information Engineering, Measuring and Controlling Technologies and Instruments, Optical Information Science and Technology, Communication Engineering, and Optoelectronic Engineering etc.).

OECE consists of Department of Optoelectronic Engineering (Institute of modern optics and optoelectronic technologies), Department of Electrical Engineering (Institute of measuring technologies and information engineering), Department of Control Engineering (Institute of information and control engineering), Department of Communication Engineering (Institute of information and communication engineering), Department of Computer Engineering. Research and Development Center of Optoelectronic Instruments, and the Center for Optoelectronic Laboratory (the Center for undergraduate Laboratory), It is also the National Optical Instrument of Quality Supervision and Inspection Center, the nominal department of the National Technical Committee on Optics and Optical Instrument of Standardization Administration of China and that of the Optical Engineering Society of China.

The discipline "Optical Engineering" is recognized as the national key discipline (cultivated stage) and the institute of modern optics system is the key laboratory of shanghai science and technology committee.

5.1.1.3 Subjects and laboratories

The OECE consists of the following departments:

- Department of Optoelectronic Engineering
  - Modern Optical Section
  - Optical-Electrical Technology Section
- Department of Electrical Engineering
  - Electrical Technology Section
  - Electrotechnics and Electronics Section
  - Electronic Information Section
- Department of Control Engineering
  - Information and Control Engineering Section

- Information Science Section
- Automation Section

- Department of Communication Engineering
  - Measurement and Information Technology Engineering Section
  - Communication Engineering Section
- Department of Computer Engineering
  - Computer Science
  - Network Engineering Section

The OECE has two doctoral programs:

- Optical Engineering (National and Shanghai Key Discipline)
- Test Measurement Technology and Instruments

Furthermore, there are 13 master and 11 bachelor's programs, such as

- Optoelectronic Engineering
- Optical Information Science and Technology
- Electrical Engineering and Automation
- Measurement and Control Technology and Instrument
- Automation, Electronic Information Engineering
- Electronic Information Science and Technology
- Information and Computing Science
- Communication Engineering
- Network Engineering
- Computer Science and Technology

Laboratories:

The discipline “Optical Engineering” is recognized as the national key discipline (cultivated stage). There are also several national and key organizations in optoelectronic Engineering department:

- Engineering Research Center of Optical Instruments and Systems, Ministry of Education;
  - Ultrafast Electro-Optics and Terahertz Technology Lab
  - Nano Photonics Devices Lab
- National Optical Instrument of Quality Supervision and Inspection Center

- National Engineering Research Center for Industrial Process Automation
- Shanghai Key Laboratory of Modern Optical Systems
- Optic- Electrical Instrument R & D Center
- Optoelectronic experimental center for undergraduate student

5.1.2 Committees in Relation to the Teaching in the Programme to Accreditation

The following management departments and leaders are responsible for the supervising the teaching quality in USST:

- Vice President Prof. CHEN Jingliang (responsible for the education affairs)
- Vice President Prof. CHEN Bin (responsible for International Relations)
- Teaching Affairs Agency of USST;
- Teaching Affairs Office in OECE;
- Professors' Association of OECE;

5.1.3 Research Facilities

The OECE is research oriented and has good facilities in research fields. The OECE has developed rapidly over the past five years. With the help of the government and in cooperation with research institutes were set up companies and carried out various projects. The Department of Optoelectronic Engineering has attaches great importance to research and has received several awards in recent years.

There are also several national and key laboratories and organizations in the OECE, they are

- Engineering Research Center of Optical Instruments and Systems, Ministry of Education;
  - Ultrafast Electro-Optics and Terahertz Technology Lab
  - Nano Photonics Devices Lab
- National Optical Instrument of Quality Supervision and Inspection Center
- National Engineering Research Center for Industrial Process Automation
- Shanghai Key Laboratory of Modern Optical Systems
- Opto-Electric Instrument R & D Center

These laboratories are also belonging to the optoelectronic engineering department. The research fields include:

- Optoelectronic Technology
- Optical-electrical Detection Technology
- Optical Instruments

- Fiber Optical Communication Technology
- Biomedical Optics and Visual Optics
- Printing Optical Engineering
- Micro-Optical-Electro-Mechanical System and fabrication technology
- Ultrafast Electro-Optics and Terahertz Technology
- Advanced Optical-electrical material and applications
- Liquid crystal display technology
- Solar cells technology
- Nano Photonics Devices fabrication technology
- Technologies of Light-scattering Measuring Particles
- Thin films and Optical Waveguide Technologies
- Visual Optics

In the recent years, OECE has taken on many key research projects such as the national nature science foundation Committee, national 973 and 863 programs, the key projects from Shanghai Committee of Science and Technology, the key projects from Shanghai Municipal Education Commission, the international cooperative projects, the projects from the Foundation for Young Scholars of Shanghai Municipal Education Commission, as well as Industry-Funded Projects. The average annual research funding has exceeded 30 million Yuan. The detailed project list is shown in Appendix C.

In the past 10 years, OECE has burdened national key research projects, such as:

- “Research on Micro-Optical-Electro-Mechanical System of visual and artificial device” belonging to the National Basic Research Programme of China “Basic theories and key scientific problems of visual restoration”.
- OECE has accomplished one national high-tech project (863) “Study of ferroelectric liquid-crystal shutter” and won the second class prize of the Scientific and Technological Progress Award of Ministry of Machine and Electricity.
- The college has also accomplished the major project “Study of the homemade and key elements of super-small aero craft (i.e., photography systems with long focal length)” from Shanghai Committee of Science and Technology and the research achievement “The dividing head and astrolabe with one second” won the state third class prize of the Scientific and Technological Progress.
- What's more, OECE has signed a long-term cooperative agreement with some international famous companies and enterprises such as American OmniVision Co. which is the inventor

of CMOS image sensor and the biggest developer and producer in the world. Two sides have a joint research on the projects including “Development of optical lens based on the PDLC materials” and “Study of extending the focal depth of optical systems”.

5.1.4 Programme of study and degrees with respect to the course to be accredited

The following study programs are supported within OECE, including:

- A “Post-Doc” station;
- A “senior discipline” PhD specialty in Optical Engineering, including Photoelectric Detection and Photoelectric Instrument.
- A “superior discipline” doctoral specialty Measuring and Testing Technologies and Instruments;

OECE provides two doctoral programs:

- Optical Engineering (National and Shanghai Key Discipline)
- Test Measurement Technology and Instruments

Five master's programs:

- Optical Engineering
- Technology and Automatic Detection Equipment
- Precision Instruments and Machinery
- Measuring and Testing Technologies and Instruments
- Signal Processing

And 11 bachelor programs:

- Optoelectronic Engineering
- Optical Information Science and Technology
- Electrical Engineering and Automation
- Measurement and Control Technology and Instrument
- Automation
- Electronic Information Engineering
- Electronic Information Science and Technology
- Information and Computing Science
- Communication Engineering
- Network Engineering

- Computer Science and Technology

In the “National Optical Instrument Testing Center”, professors provided the excellent research experimental conditions for the bachelor, master and doctoral students.

5.1.5 Particular strengths in teaching and research

OECE has taken the advanced education concepts for students. Therefore, particular strengths represents as:

- OECE owns one national key course: Optical information processing and other four shanghai high education key courses;
- "Bi-lever high education method and its application in the OECE" won the First class Prize of excellent education awards in Shanghai education committee;
- The faculty team, "Photoelectronic was information engineering" by Prof. Yang of the Shanghai Municipal Education Commission as "Excellent Teaching Team" in 2009;
- Experimental optical information center won second prize of Shanghai Excellent Teaching Achievements in 2009;
- Prof. CHEN Jiabi won the excellent teaching awards in Shanghai education Committee and Prof. Li Xiangning won the excellent teaching awards in USST;
- Dr. GUO Hanming, who is instructed by Academia Prof. ZHUANG Songlin, won the “Outstanding Doctoral Dissertation of the Nation (top 100 doctoral thesis)” awards in 2009;
- Optoelectronic department faculty group won the Shanghai model awards of collective labor;
- Young faculties in Optoelectronic department won all kinds of talents awards in Shanghai education committee or Shanghai Science and Technology Committee;
- The Textbook "optical information processing technology" edited by Prof. CHEN Jiabi won the international excellent textbook awards.

5.2 Partnerships - Partnerships in Relation to this Programme

5.2.1 University-Based Collaboration

OECE has a long-term and stable cooperation with Coburg University of Applied Sciences. The major of "Measurement Technology and Instrument", which is organized in cooperation by two universities, is a cooperation and exchange project in master's degree level. This project takes the study method of domestic students and foreign students mixing in the same class with school system for two years. Students study in USST in the first year and study in Coburg University of Applied Sciences in the second year with all-English teaching. The location of internship and writing papers is selected by students themselves. Since the school sent the first batch of students went to Coburg University of Applied Sciences in 2008, the scale and quality of

selected students improve steadily, so far, all Chinese students participating in this project gain both sides of master's degree and more than half of graduates continue to stay in Germany working or pursuing further studies.

5.2.2 External Cooperation with Universities / Non-University Institutions (Including International Cooperation)

OECE, especially the department of Optoelectronic department, has a wide cooperation and close connections with other universities and institutions in China and across the world. For example, there is also a co-operation with the Chinese Academy of Sciences. Some professors and research groups also conducted research projects in cooperation with external Partners through; For instance, Prof. ZHUANG with Tsinghua University, Prof. HOU with the Fudan University, Professor Zhang with the Shanghai Jiaotong University and Prof. ZHU with Tianjin University .

What's more, OECE has a wide collaboration with international famous Optical-electrical enterprises, for example, OECE and the Ocean Optics company (USA) has a joint research laboratory locating in USST campus. It is militarily that OmniVision company (USA) also invested and construct a joint laboratory in OECE.

5.3 Staff Involved

The Optoelectronic engineering department has a very excellent teaching faculty group. The professors have formed into a high efficiency, capability and experienced teaching group composed by well-known scholar-Doctor-mainly Engineers and Technicians capabilities. The teaching group leader is the national famous scientist, academician Prof. ZHUANG Songlin. This group contains 1 academician, 1 Cheung Kong Scholar, 2 Eastern Scholars, 1 Pujiang Talent Scholar, and 3 Rising-Star Scholars. The strong academic conditions have provided an intelligent support for the teaching activities. The elaborate staff information is listed in Appendix A. Table 6 is the general information of professors involved in this programme.

Table 6. The General Information of Professors Involved in Optoelectronic Engineering

Name	Age	Education	The title of Technique	Other
CHEN Jiabi	64	Bachelor	Full Professor	Excellent University Teacher awards in Shanghai education committee, responsible for the Shanghai Quality course" laser technology", dedicate in the national quality course "optical information processing" , won the prize for the editing excellent teaching books.
CHEN Kejian	32	Doctor	Lecture	Responsible for the course "optical information network", dedicate in the course “Optical system simulation with software”
CHEN Qing	43	Doctor	Associate Professor	Responsible for the course "imaging processing"
DONG Xiangmei*	33	Master	Lecture	Responsible for the optical related experiments courses

FANG Baoying*	34	Master	Lecture	Responsible for the experimental course.
GUO Hanming	34	Doctor	Associate Professor	One-hundred Excellent Doctoral Thesis Awards winner, dedicate for the course "Optical information processing"
GENG Tao	33	Doctor	Associate Professor	One-hundred Excellent Doctoral Thesis Awards winner, dedicate for the course "Optical information processing"
GU Zhengtian	48	Doctor	Full Professor	Excellent Teacher awards in USST. Responsible for module “physics”
HOU Wenmei*	60	Doctor	Full Professor	With working experience in the enterprise, responsible for the course "Nanometrology " and "Measurement and Sensor" module
HU Qi	33	Doctor	lecture	Dedicate for the course " Infrared technology" and “Measurement and Control Circuits”
JIA Hongzhi	42	Doctor	Full Professor	OE Department Head, With working experience in enterprise, dedicating the course "wave optics", responsible for the course "infrared technology"
JIAN Xianzhong	41	Doctor	Associate Professor	With working experience in enterprise, responsible module "microcontroller"
JIANG Minshan*	31	Doctor	Lecture	Responsible for the course " biological optical measurement"
LI Haiying*	40	Doctor	Associate Professor	Responsible for the module " Electric Circuits"
LI Mengchao	57	Bachelor	Full Professor	Owning working experience within enterprise, dedicate the course "The Photoelectron Emitting and Display"
LI Xiangning*	54	Master	Full Professor	Excellent Teacher awards in USST. Responsible for module "Technical Optics", Responsible for the Shanghai Outstanding Quality course "engineering optics "
LI Zhenqing	32	Doctor	Lecture	Dedicated in the course “Programming C” and its experiments
LI Yi	46	Doctor	Full Professor	Working experience in enterprise, Dedicating the course “Optoelectronic Devices”
LIANG Binming	33	Doctor	Associate Professor	Dedicate for the course "Laser principle“,“ optical communications "and "optical information processing"
MA Junshan	46	Doctor	Full Professor	Responsible for the course module "optical Communications "
MU Ping'an	43	Doctor	Full Professor	Responsible for the course" Measurement and Control Circuits"
NI Yi	31	Doctor	Lecture	Dedicated for the course “Nanometrology”
PENG Runling*	32	Doctor	Associate Professor	Shanghai Excellent Doctoral Thesis Awards winner, Dedicate for the course "laser principle" and "Optoelectronics”, involved in the English teaching.
PENG Yan*	30	Doctor	Associate Professor	Dedicate for the course "weak signal detection” and “optical system simulation with software”
SUI Guorong	36	Doctor	Associate Professor	Dedicate for the course " Digital signal processing ","optical communications ",

				responsible for the undergraduate students' creative design competition
XIAO Erliang	41	Doctor	Associate Professor	Dedicate for the course "FPGA and its application", and the related experimental course
XIN Shangzhi*	44	Doctor	Associate Professor	Responsible for the module “Electronics”
XU Boqing	50	Doctor	Associate Professor	Duty dean of the college, in charge of the educational administration, in charge of students' practice, responsible for the course "signal and system"
XU Jian	40	Doctor	Full Professor	Oriental Scholar, dedicated in the course “ Nanotechnology ”etc.
YANG Bo	33	Doctor	Associate Professor	Responsible for the course "Modern illumination technology", Dedicate for the "engineering optics ", responsible for the course" photoelectron emitting and display"
YANG Yongcai	53	Master	Full Professor	Dean of College, responsible for the shanghai Quality course module "Optoelectronics"
ZHANG Dawei	33	Doctor	Full Professor	Rising Star Awards winner, duty dean of the college, dedicate for the course "Optoelectronics ",responsible for the course "Thin film technology"
ZHANG Huilin	39	Doctor	Associate Professor	With working experience in enterprise, dedicate for the series experiments courses Dedicate for the course "microcontroller design"1-2, and the related experimental course
ZHANG Rongfu	39	Doctor	Associate Professor	With working experience in the enterprise, dedicate for the Shanghai Quality Course "Optoelectronics"
ZHANG Wei*	31	Doctor	Lecture	Dedicated the course" computer aided optical design"
ZHANG Xuedian	36	Doctor	Associate Professor	With working experience in the enterprise, responsible for the module "computer science ",dedicate for " electrical circuits and devices"
ZHENG Jihong*	35	Doctor	Full Professor	Rising star awards winner, dedicate for "optics information processing" and "nanometry technology" courses, responsible for the course module "Modern Optics"
ZHU Yiming	31	Doctor	Full Professor	Shuguang and Pujiang scholar winner, responsible for the full English course "Integrated circuit fabrication technology "course and “Photovoltaic Technology"
ZHUANG Songlin	70	Doctor	Full Professor/Academician	National Academician, President of OE College Principle for National Quality Course "Optical Information Processing"

(* refers to the female teacher)

5.3.1 Composition

In assessing the scope of the staff, it should be mentioned that some of the modules take place at the OECE are English-language immersion course. There are qualified teachers with sufficient English language skills Use: Prof. Dr. HOU (Nanometrology), Prof. YANG (Photoelectric Detection) and Prof. ZHENG (Optical processing) and Prof. ZHU (Integrated circuits fabrication technology). These teaching and learning processes are fulfilled in Immersion- English atmosphere.

5.3.2 Supporting Costs (Academic Counseling, Consultations, Tutoring, Mentoring Programmes)

Given the yet manageable number of students was an individual personal attention to each student is possible without formal consultation had to be established. The supervision was done in organizational issues (Student Administration, residence permits, accommodation, Administrative matters) by the coordinator and secretary, in technical issues by specialist teachers and the director of the programme. Because all students also worked as certified graduate assistants were a daily contact was with the staff working there and with the guidance. In one case, a professional lecturer help a student who in the first Attempt had failed an exam, dedicated individual mentor hours; the second attempt was successful. For the semester each student is assigned a supervisor who also conducts visits to the internship positions;

5.3.3 Teaching-Related Training

At the USST Prof. ZHU Yiming has been professor Listed in 2009 as new appointments. Furthermore, three specialist teachers of the College of Optical-electrical and Computer Engineering in the fall of 2009, three months for Training at the Institute of Sensor and actuator at the University of Coburg for applied Science and Art was a guest. They have classes and participate students participated in the care of her master's thesis.

5.4 Financial and Material Resources

5.4.1 Human Resources, Property, Funds, Investment Funds

Within the past three years, the investment on scientific research and infrastructure of the college is increasing within each year, for example research funding has reached to 35 million yuan in 2011, including 20 million yuan in photoelectric direction. The college and some scientific enterprises provide students with various scholarships about more than 100,000 yuan every year. The institute has set up innovation research project teams, members of team enjoy the annual salary regulation. The annual salary of associate professor is 150,000 yuan, professor of 200,000 yuan and Dr.lecture of 120,000 yuan.

5.4.2 Grant Investment Equipment within Pervious 3 Years

The lists that the grant investment equipments that have conducted in the past 3 year is shown in Appendix G. Table list 1 belongs to equipments investment in SHANGHAI modern optics laboratory. List 2 shows the equipment investment in Ministry of Education Engineering Research Center of Optical Instruments and Systems. It can be calculated that total investment on the equipment are 2226.9 (ten thousand Yuan).

5.4.3 Facilities (Lecture halls, Seminar Rooms, Student Jobs)

For modules, the lecture halls in the new centrally managed. Auditorium Building D has been used consistently with the new projectors and 34 computers are equipped. Available for laboratory exercises in the main building of the College of Optical-Electrical and Computer Engineering laboratories with metrological Basic equipment (oscilloscopes, electrical meters) are available.

Meetings and guest lectures to the conference room of the college (with Projectors are equipped) carried out. Guide to self-experimental research, the students receive in the laboratory for optical Precision Measurement of Prof. Dr. HOU.

5.5 Information provision

5.5.1 IT Supply computer equipment to support

5.5.1.1 EDV Equipment Electronic data processing equipment (computer equipment to support)

Computer equipment in Jungong Road campus: computer classrooms: 401-510, a total of 16, PC 704 unit is networked in normal working condition.

- Minimum standards are the Intel core2 1.8G/2G / memory / independent display card / 250G/17 inch LCD display;
- Advanced Configuration is Lenovo Think Centre reaching the standards of the Intel I5 750 2.67G/4G / independent display card / 500G/19 inch LCD display.
- The network speed in laboratory has reached gigabit to the room and kilomega to the desktop.
- Each computer has been created Windows XP platform, windows 7 platform and standard, special districts have been set up in Windows XP platform in order to solve the incompatibility problems of the various professional software in different versions.
- 50% of labs are equipped with multimedia equipment such as projectors, wireless microphones and so on; 100% of the computers are installed with multimedia teaching software.
- There are 189 PCs else in computer laboratory center of OECE. The detailed information is shown in Appendix H.

5.5.1.2 Supervision of students, qualifications of the supervising staff

- Full-time laboratory staffs maintain and support techniques for computing center and professional teachers guide work on the machine of different modules.
- Professional teachers with middle and senior professional titles guide students for professional guidance on the machine and qualifications of faculty advisers are shown in Table 7.

Table 7. Faculty Adviser

faculty adviser	**qualifications of the supervising staff**
LI Xiangning	professor
YING Jie	associate professor
ZHANG Xuedian	associate professor
XIA Kun	associate professor
ZHENG Jihong	associate professor
ZAHNG Rongfu	associate professor
CHANG Min	lecturer
PENG Yan	lecturer
WANG Yingkun	lecturer
WANG Xinhua	lecture

5.5.1.3 Number of computer rooms, opening times etc.

- Computing Center of Jungong Road 401-410,501-510, 16 rooms, a total of 704 computers
- Opening time: 8:00-22:00 every day

5.5.1.4 Restrictions / disability

- Campus wireless network covers all office buildings, academic buildings, libraries.
- Computers in computing lab are updated annually to meet more advanced needs.
- All kinds of high-end computing auxiliary experiments can be completed through virtual experiment platform and virtual technology as long as having the network and the basic accession equipment.
- Care is taken for disable students for instance, students needing wheelchair to enter classrooms using elevator.

5.5.2 Library, Literatures, Media Supplies

School library provides the teaching book throughout the whole college. Dating back to 1906, there were a number of reading rooms and the first library was established in 1909. Library Center covering an area of 23,000 square meters was built in 2007,of which 8 layers were on the ground floor and one was underground. 2-7 layers are large-scale reading rooms and warehouse of books and magazines, the 8th layer has academic lecture hall and student studying room; in The integrated management model "possession, borrowing, reading, inquiring, checking " are taken in the function. In addition, there are four libraries in other campus.

- 81735 bound periodical in Chinese and foreign journals in the library

- Purchasing more than 964 kinds of current period Chinese periodicals
- 57 kinds of foreign periodicals
- 104 kinds of newspapers
- Nearly 1.2 million paper books, 3.25 million kinds of e-books
- Ordering 11 foreign language electronic databases, 15 Chinese electronic databases, 3 video databases
- 1 self-built database of papers of postgraduates and doctors in our school; 10,414 kinds of CD according to the books, a total of 35782
- Literature languages including Chinese, English, French, German, Russian and Japanese.
- 1560 seats in the studying room;
- Wireless network is available in the library;
- Opening time: 8:00 – 16:30 on Monday, Wednesday, Thursday, Friday; 8:00 – 13:00 on Tuesday

5.5.3 Laboratory Equipment

5.5.3.1 Basic Laboratory

- Lab of analog electronics and digital electronic technology

Laboratory is targeted for the professional basic theory modules, currently mainly for experiments according to the theory modules such as "Analog Electronics technology ", "Digital electronic technology", etc. Experiments consist of basic experiments, comprehensive experiments and design experiments. Self-made, innovative experiments are especially encouraged to develop students' awareness of innovation and practical ability. Laboratory opens for all students providing a good learning environment to improve students' practical ability. Lab of analog electronics and digital electronic technology is serving for undergraduate students majoring in optoelectronic engineering, control technology, communication engineering, automation, computer, electrical engineering, medical appliances. Each year there is about 2251 people. Equipment are oscilloscopes, signal generators, digital-analog power technology experimental box, EDA experimental box, meter, mill voltmeter. Teaching tasks are mainly for digital electronics and analog electronics technology experiments.

- Laboratory of Microprocessor/Microcontroller

Microprocessor/microcontroller lab mainly enables students to understand the basic characteristics of microcomputer and single-chip applications by teaching so that students can master the basic skills for developing applications of microcomputer and single chip and the lab creates conditions of technical training for students before their entering for work. Meanwhile, students are required to master the principles and characteristics of microcomputer and

real-time operating system of single chip and skillfully write application software based on microcomputer and single-chip real-time operating system according to the features of most operating systems.

The configured equipment of the lab are 36 personal computers, 36 experimental teaching systems of single-chip/microcomputer and the corresponding hardware control objects.

5.5.3.2 Professional Laboratory

- Laboratory of Engineering Optics Techniques

The laboratory of engineering optics techniques is the professional basis lab of college major of optical-electronic Information engineering including two parts of the application of optical experiments and physical optics experiments, which are the supporting experiments according to the two theoretical modules. Among them, optical engineering experiments includes 12 applied optics experiments: the imaging characteristics of light group, light group, focal length measurements of light group, a typical optical system experiment; and 10 physical optics experiments: grating diffraction, polarized light interference, single slit diffraction, equal thickness interference. Students have good basis knowledge through experiments for the further learning of optical-related modules. Major equipment resources: Focus instrument, theodolite.

Laboratory teaching purposes:

  - understanding the basic optics knowledge, basic optical theory, the typical optical structure
  - operating typical optical instruments canonically
  - mastering the common optical measurement methods
  - analyzing the experimental phenomenon and the experimental results

- Laboratory of Laser and Optical Information Technology

Laser and optical information technology laboratory is a basic professional laboratory. The experiments through experimental teaching introduce experiments related to the laser and optical information including the precise detection technology of modern optical, the experimental method of modern optical information processing, and optical resonant structure and the practical skills of A-O Q-switch. Teaching experiment is designed to enable students to deepen their understanding and master of the basics knowledge related to laser and optics information, exercise their practical ability and analytical skills; learn the application of combining optical mechanical and electrical knowledge in modern precise measurements and optical information processing.

Laser and optical information technology laboratory is set up for the series experiments of the laser and optical information technology for the undergraduates whose majors are optical information science and technology and photoelectric information engineering and graduate

students who are interested in related fields, serving for professional modules such as laser application principle, physical optics, optical information technology and so on.

8 confirmatory experiments, 2 comprehensive experiments, 2 design experiments Equipment resources: GCI-Las-III-type helium-neon laser cavity transfer experimental device; GPF-NG-I acousto-optic Q-type experimental apparatus;

CSY-10L laser multi-function optical testing system experimental apparatus

(Laser Universal Opto-Electron Testing Systems)

- Photonics Technology Lab

Photonics technology lab is a professional laboratory for the major of optoelectronic engineering. The teaching is for three phases, the first phase is to learn independent components: laboratory offers a variety of common and the most advanced light-electricity, electrical-optical components, students use a variety of tools and equipment to understand the inside and outside structures and basic properties of devices in a qualitative or quantitative way; second phase is to learn functional modules: Laboratory offers a variety of optical and electrical sensors with independent functional modules that students can dismantle, install and measure the performances of these devices in order to understand the combination between optics and electricity with other modules as a whole. The third phase is system design: students use the knowledge to design entity structures combining with optical, mechanical and electrical knowledge and the entity structures have functions of use. Students' abilities of engineering practices have been cultivated systematically.

- Laboratory of Optical Communication Technology

Laboratory of optical communication theory and technology is a professional laboratory. The teaching of experimental curriculums focuses on experiments about optical fiber and optical fiber communications including the measurement methods of fiber's main characteristics, the basic form of optical communication systems and the way of signal transmission, etc. The teaching experiments are designed to enable students to understand the basic principles and compositions of optical fiber communication, master the measurement techniques of fiber's main characteristics, understand the classification and application of optical fiber and the basic principles of digital signals, analog signals transmitting in fiber and the basic components of optical fiber communication network.

Laboratory of optical communication theory and technology has been arranged for a series of experiments about the principles and technology of optical communication for the undergraduates whose majors are Optical information science and technology and Photoelectric information engineering and graduate students who are interested in related fields serving in optical communication theory, optical communication technology, electronics technology, photo electricity information technology modules.

10 confirmative experiments, 1design experiment

Equipment resources: the experimental system integrated communication

- Laboratory of Software Simulation

Laboratory of software simulation provides several kinds of professional simulation software related to photo electricity information engineering: ProtelDXP for circuit design; MATLAB for data analysis and numerical calculation; ZEMAX for optical imaging system design; LIGHTOOLS for lighting system design; VPI for optical communication system design. These software are commercial software which can help students to master the knowledge as well as to lay a foundation for the future work.

6 Quality Management: Further Development of Degree Programmes

6.1 Students Learning Situation (Performance Evaluation, Feedback from Graduates, Student Status Changes)

6.1.1 The Number of Students, Graduation rates

Table 8 is the number of students and graduation rate from 2007 to 2012. In China, the beginning and the end of each semester is fixed and the students end their studies within the specified time.

Table 8. The Number of Students and Graduation Rate from 2007 to 2012

Graduation Year	Total students' number	graduated students' number	graduated ratio
2007	97	97	100%
2008	112	108	96.4%
2009	107	103	96.3%
2010	124	121	97.6%
2011	153	150	98.0%
2012	118	114	96.6%

6.1.1.1 Performance evaluation, graduation achievement

Students should gain the required credits through four years study. The failed module will be marked red in the individual performance list. At the end, the examination committee will inspect the performance and score of each student. A few students interrupt their studies due to their poor performance in some subjects such as math and physics. Good performance in CET-4 is another important factor to pass the inspection. Only if the students are satisfied with the requirement for bachelor degree, they will be approved to get the degree. The transcript sample is shown in Appendix L.

6.1.1.2 Performance assessment, continuation of statistics

Teachers will hand over the achievement report of exam in each semester; the academic instructor will analysis the achievement for each student and find the way to improve it. The student who failed in two modules will be arranged a “special” academic tutor, who will supervise and encourage the students’ study and performance through talking, counseling, and discussing etc. The college will award the tutor who makes his or her students improve significantly. Our college is always keeping in touch with the student’s parents and report them the child’s performance in the university.

6.1.2 Investigation on students

Feedback of teaching in subjects will be giving after each semester, and the students can’t elect the courses for new semester until they submitted the feedback.

6.1.3 Statistics of the graduate whereabouts

The whereabouts of the graduates are giving by the Table.9.

Table 9. Whereabouts of the Graduates

Graduation year	Headcount	the number of employment	Employment rate					
				Signing a contract	The rate of Signing a contract	Enrollment	Going abroad	Employment by contract
2012	114	113	99.12%	56	49.12%	35	8	4
2011	150	135	90%	70	46.67%	27	17	13
2010	121	120	99.17%	44	36.36%	41	9	11
2009	103	101	98.05%	33	32.03%	32	7	2
2008	108	103	95.37%	54	50%	13	3	33
2007	97	93	95.87%	61	62.88%	8	4	18

6.2 External assessment

(Not applicable)

6.3 Internal assessment

Analysis of students' evaluation for teachers will be doing by Senate Committee (constituted by Executive Director, Academic Dean, the Head of Department, and all responsible for teaching). Assessment is taking by semester. The past problems had been solved by different manners (such as talking with relevant teachers or replacement of them).

6.4 Enrollment of optoelectronic engineering

Table 10 shows the graduate situation of Optoelectronic Engineering in recent 4 years.

Table 10. Nearly Four Years Graduate Situation of Optoelectronic Engineering

Totally 593 students majored in Optoelectronic Engineering within latest 5 years				
In 2007	In 2008	In 2009	In 2010	In 2011
97	112	107	124	153

Nearly four years graduate situation	In 2011	In 2010	In 2009	In 2008
Nearly four years bachelor's degree getting rate in this professional	98.0%	97.6%	96.3%	96.4%
Nearly four years postgraduate admission rate in this professional	17.7%	33.1%	28.2%	12.4%

6.5 The number of students and studies interrupted rate of optical-electrical engineering in every semester

Shown in table 10.

6.6 Circumstances of the graduates

Shown in table 9 and table 10.

7 Quality Assurance Measures

7.1 Evaluation during the study

After the modules for the general evaluation principles are finished, an internal evaluation is done for the study performed by the lecture management department. The teachers take surveys of students with standardized questionnaires at the end of each semester in their classes individually. The results are collected by the Chairman of Examiners, transmitted to the Dean of the Faculty and the University, then informed to the individual teachers. Some related assessment form is shown in Appendix I.

7.2 Evaluation of academic success

Appendix J is a diploma sample for each student graduated from optoelectronic engineering of USST. The diploma is valid only when both signature of president at present and the official stamp of university of Shanghai for Science and technology are true and effective.

During the past 3 years there are altogether 385 students who passed all the examinations within the study period (success rate is 97.4%). The score range is fully distributed in a reasonable spectrum. In few cases there were students who needed to take the examination once again and they passed in the second attempt.

An alumni database and an alumni network are built to gather feedback from the graduates after they begin their profession. Discussions and periodical gathering are held when the University celebrates her anniversaries in order to establish a platform for continuous contacts with graduates and thus improve the study plan including the modules.

7.3 Further development of the programme - continuous improvement

With the development of technology and the demand from the job market, a permanent readjustment and development is required. The formal framework is provided by the USST, a major quality monitoring and measurement department. State key laboratories are open for the undergraduate students. They can take the experiments after class under the supervision of the teachers.

Appendices List