

## Kphqt o cvkqp "Hqt o "hqt" ULVW" I t c f w cvg "Rtqhguukqp" Eqwtugu"

Dcuke "Kphqt o cvkqp"				
* Course Name	Chinese			
	English Optoelectronic Device and System			
* Credits	2.0	* Teaching Hours	32 1 =16	
* Semester	Spring	* Cross-semester?	No	Spanning over Semesters
* Course Type	Program Frontier Course	* Course Type	For full-time students	
* Course Category	Specialized Course	Targeting Students	All graduates	
* Instruction Language	Chinese	Teaching Method	In class teaching	
* Grade	Letter grading	Exam Method	Tests	
* School				
Subject				
Person in charge	Name	ID	School	E-mail
	Liming Gao			liming.gao@sjtu.edu.cn
Gzvpg fgf "Kphqt o cvkqp"				
* ( ) Course Description	200			
* English Course Description	<p>Optoelectronic technology is high technology based on the functional materials, optical physics, modern electronic technology and computer technology, which involves information of light radiation, transmission, detection and photoelectric conversion, storage, processing and display many of the content. Optoelectronic information technology, with its fast response speed, very wide bandwidth, huge information capacity and high efficiency and resolution information, can promote the development of modern information technology.</p> <p>Focusing on the application of engineering technology, this course explains photoelectric effect and a variety of optical phenomena, and introduces the structure and principle of commonly used photoelectric detector. The course mainly describes the characteristic parameters and scope of application of photoelectric imaging device. The typical applications of photoelectric imaging system are also introduced in this course.</p> <p>Through the study of this course, students can not only understand the basic concepts and theories of semiconductor optoelectronic devices and technology, but also know the</p>			

	<p>characteristics, structure of the common optoelectronic devices. This course will make students know the certain theoretical and professional knowledge base for the future work.</p> <p>College physics is a prerequisite for this course.</p>				
* ( ) Syllabus					
		1.1 1.2 1.3	2		
		2.1 2.2 2.3 2.4 2.5	6		
		3.1 3.2 3.3 3.4	6		
		4.1 4.2  4.3 4.4 4.5	4		
		5.1 5.2	4		
		6.1 6.2	4		
		7.1 7.2  7.3 7.4 7.5	6		
	* English Syllabus	Chapters	Contents	Hours	Method
		Chapter One Introduction	1.1 History and development of photoelectric technology; 1.2 Applications of optoelectronic technology; 1.3 Several common optoelectronic devices.	2	In class teaching
Chapter Two The Physical Basis of Optoelectronic Devices		2.1 Concept and parameters of light; 2.2 Basics of Semiconductor Optoelectronics; 2.3 Basics and application of photoelectric conductivity; 2.4 Basics and application of photovoltaic effect; 2.5 Basics and application of photoelectric emission effect.	6	In class teaching	
Chapter Three Photoelectric Control Devices		3.1 Vacuum photocells: working principle, performance and parameters; 3.2 Photomultiplier tubes: working principle, performance and parameters; 3.3 Photoconductive devices: working principle, performance and parameters; 3.4 Photovoltaic devices: working principle, performance and parameters.	6	In class teaching	
Chapter Four Thermoelectric Detectors		4.1 Working principle of thermoelectric detector; 4.2 Thermocouples and thermopiles:	4	In class teaching	

		composition and working performance; 4.3 Bolometers: composition and working performance; 4.4 Golay components: composition and working principle; 4.5 Pyroelectric devices: composition and working principle.		
	Chapter Five Photoelectric Imagers	5.1 Photocells: structure, working principle and performance; 5.2 Camera tubes: structure, working principle and performance.	4	In class teaching
	Chapter Six Light-emitting Devices and Light- controlled Devices	6.1 Light-emitting devices: working principle and working performance; 6.2 Light-controlled Devices: working principle and working performance.	4	In class teaching
	Chapter Seven The Composition and Typical Application of Photovoltaic System	7.1 Basic composition of photoelectric system; 7.2 Detection of low-light signals: system and detection method; 7.3 Video image measurement: system and detection method; 7.4 Fiber optic communication and sensing: system and characteristics; 7.5 Optoelectronic conversion and storage: System and application.	6	In class teaching
*	Requirements	50 40% 60%		
*	English Requirements	The assessment method is exam. Student's attendance will be strictly assessed. The total score is evaluated according to the usual grades and final grades. The usual grades account for 40%, the final grades account for 60% of the total score.		
*	Resources	1 2017 2 2012 3 2007		
*	English Resources	1. W Jiang: Optoelectronic Technology (Second Edition), Science Press, 2017. 2. Y Jiang, H Tang, Y He: Optoelectronic Technology, Beihang University Press, 2012. 3. S Zeng: Physical Basis of Semiconductor Devices, Peking University Press, 2007.		
	Note			