



	T-1
	P-1
1	S-1
2	M-1
3 EEG9330	I-1



	.....	T-1
1.1	.....	T-1
1.2	.....	T-1
	.....	T-4
	.....	T-4
3.1	.....	T-5
3.2	.....	T-6
3.3	.....	T-8
3.4	.....	T-8
3.5	.....	T-9
	.....	T-9
4.1	.....	T-9
4.2	.....	T-9
4.3	.....	T-10
4.4	.....	T-10
4.5	.....	T-10
	.....	T-10
5.1	.....	T-10
5.2	.....	T-11
5.2.1	.....	T-11
5.2.2	.....	T-12
5.2.3	.....	T-14
5.2.4	.....	T-14
5.3	.....	T-14
5.3.1	.....	T-15
5.3.2	.....	T-15
5.4	.....	T-16
5.5	.....	T-17

5.6	.....	T-17
5.7	.....	T-18
	.....	T-18
6.1	.....	T-18
6.2	.....	T-19
6.3	.....	T-19
6.4	.....	T-20
6.4.1	.....	T-20
6.4.2	.....	T-20
6.4.3	.....	T-20
6.5	.....	T-21
6.5.1	.....	T-21
6.5.2	.....	T-21
6.5.3	.....	T-22
6.6	.....	T-23
6.7	.....	T-23
6.8	.....	T-24
6.9	.....	T-24
6.10	.....	T-25
	.....	T-25
	.....	T-26
	.....	T-26

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## 1.1

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## 1.2

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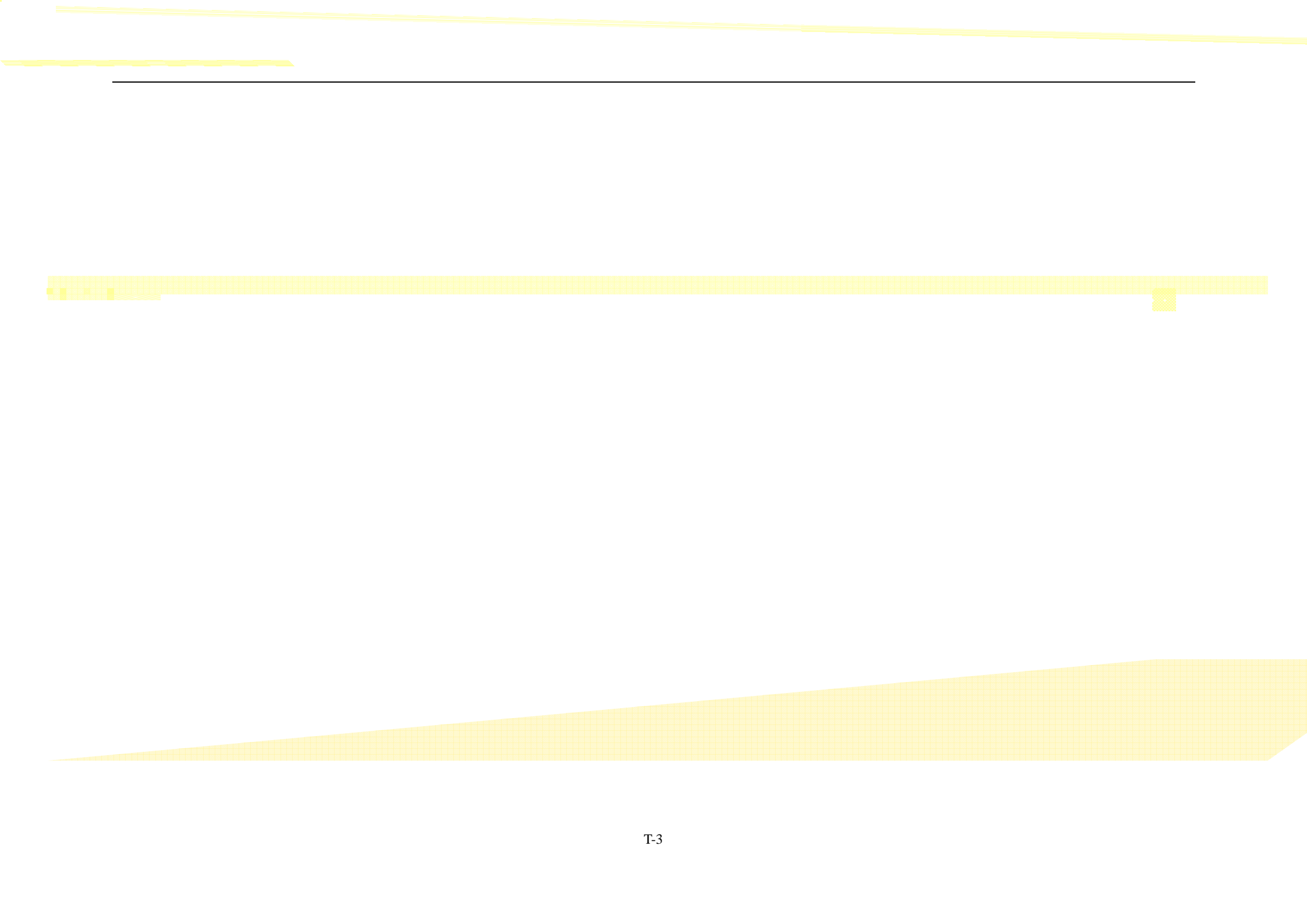
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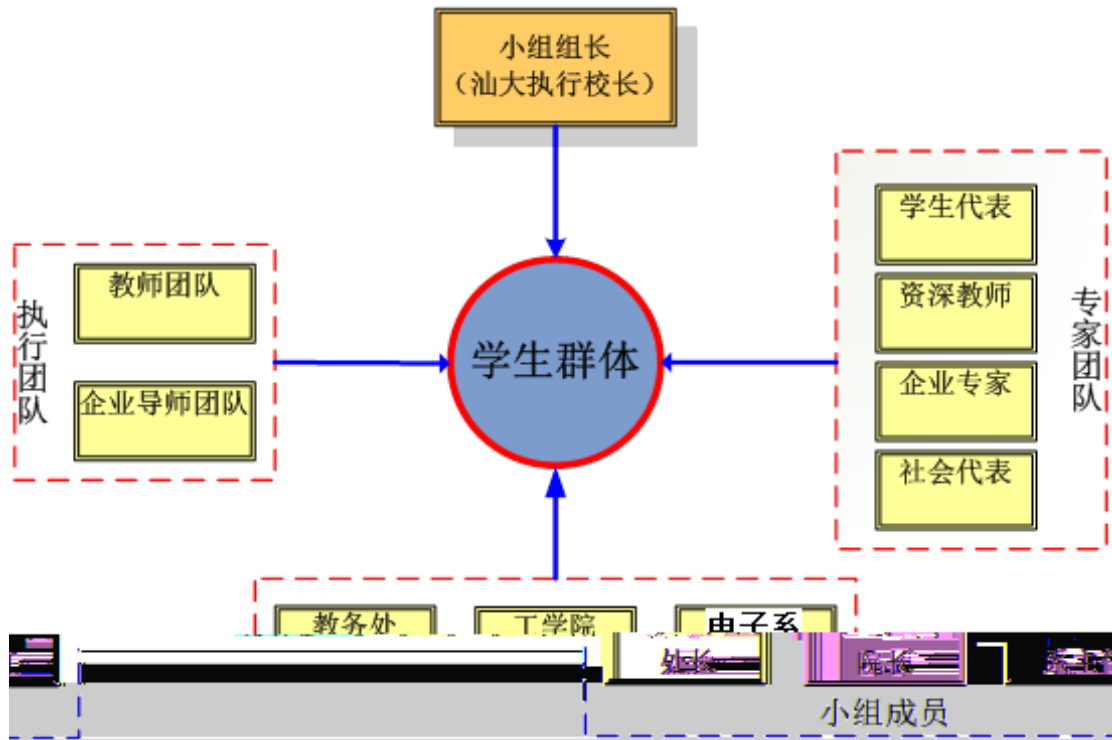




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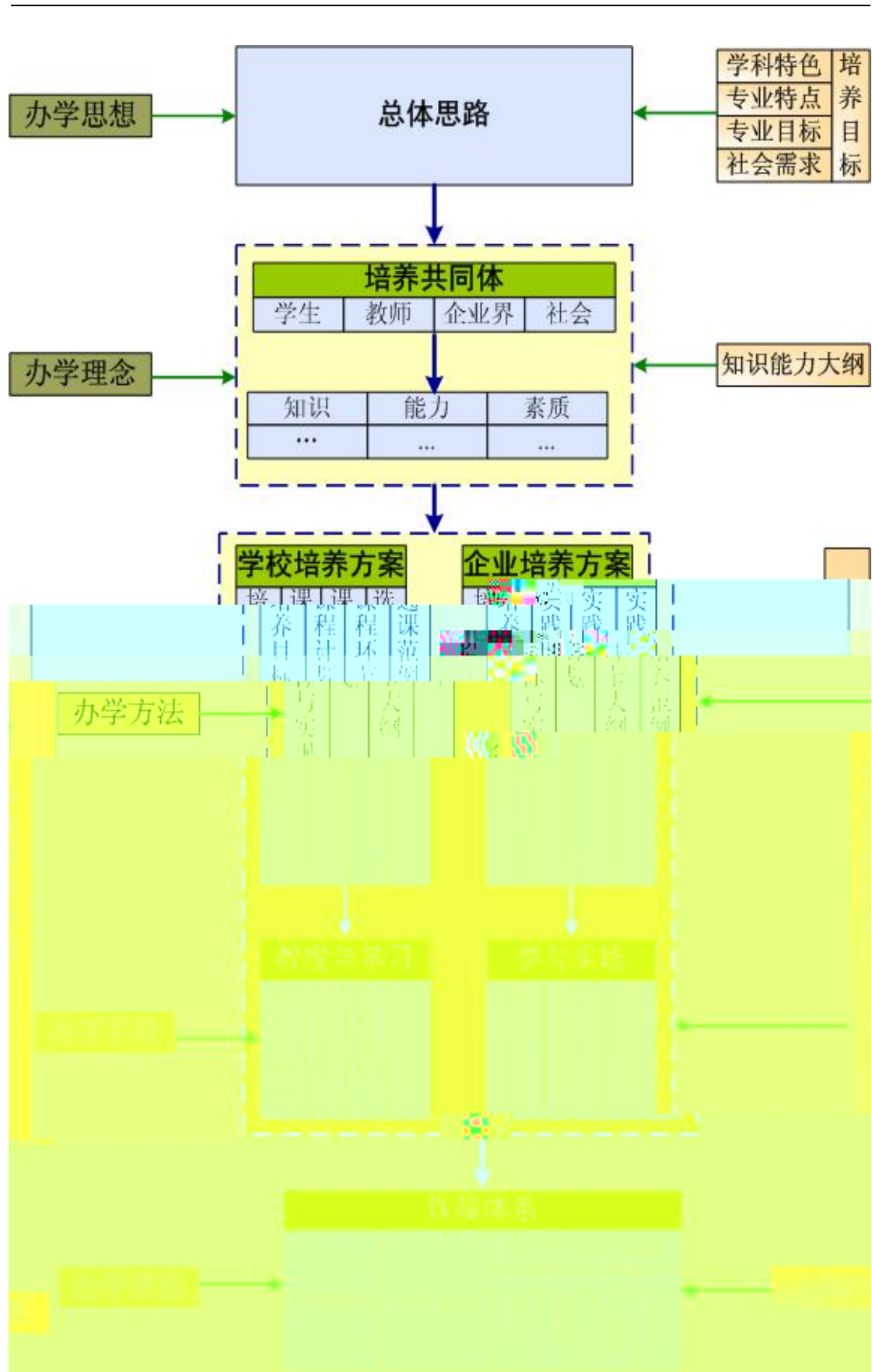
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- 3) ;
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- 5)

### 3.1

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## 3.2

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**3.3**

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### 3.4

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### 3.5

ISO :

### 4.1

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2011-2013

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### 4.4

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### 4.5

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## 5.2

### 5.2.1

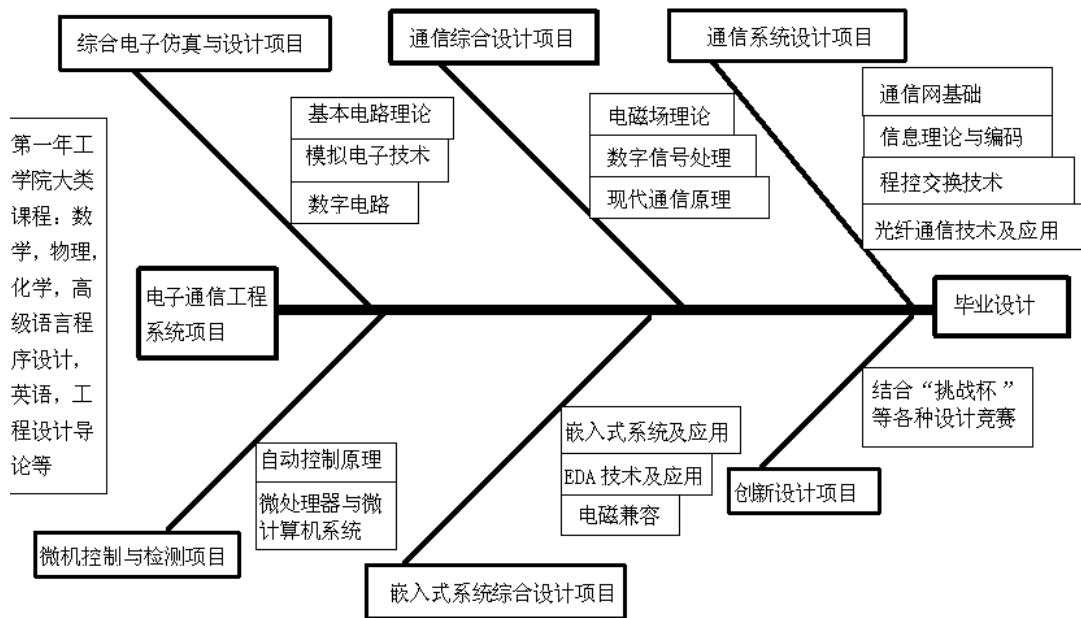
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## 5.2.2

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**5.2.3**

**5.2.4**



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		SIUI		
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(2.4 2.5 3.1 3.2)

(4.3 4.4

4.5 4.6)

**6.3**



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## 6.4

### 6.4.1

### 6.4.2

### 6.4.3

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6.8

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**6.5**

**6.5.1**

**6.5.2**

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**6.5.3**

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## 6.6

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**6.7**

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**6.9**

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## 6.10

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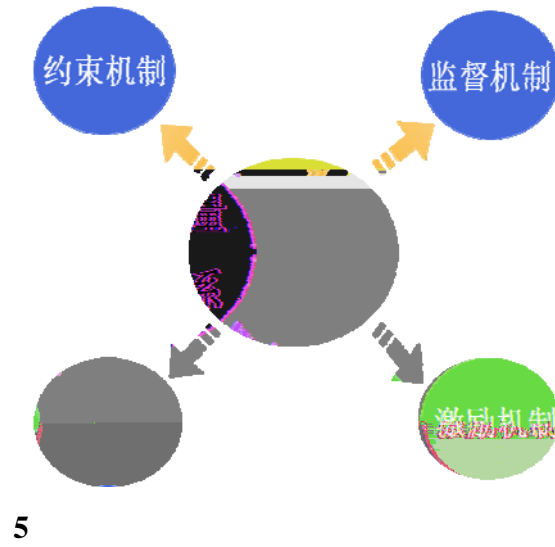
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ISO

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ISO

ISO



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- ISO

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1	S-1
2	M-1
3 EEG9330	I-1

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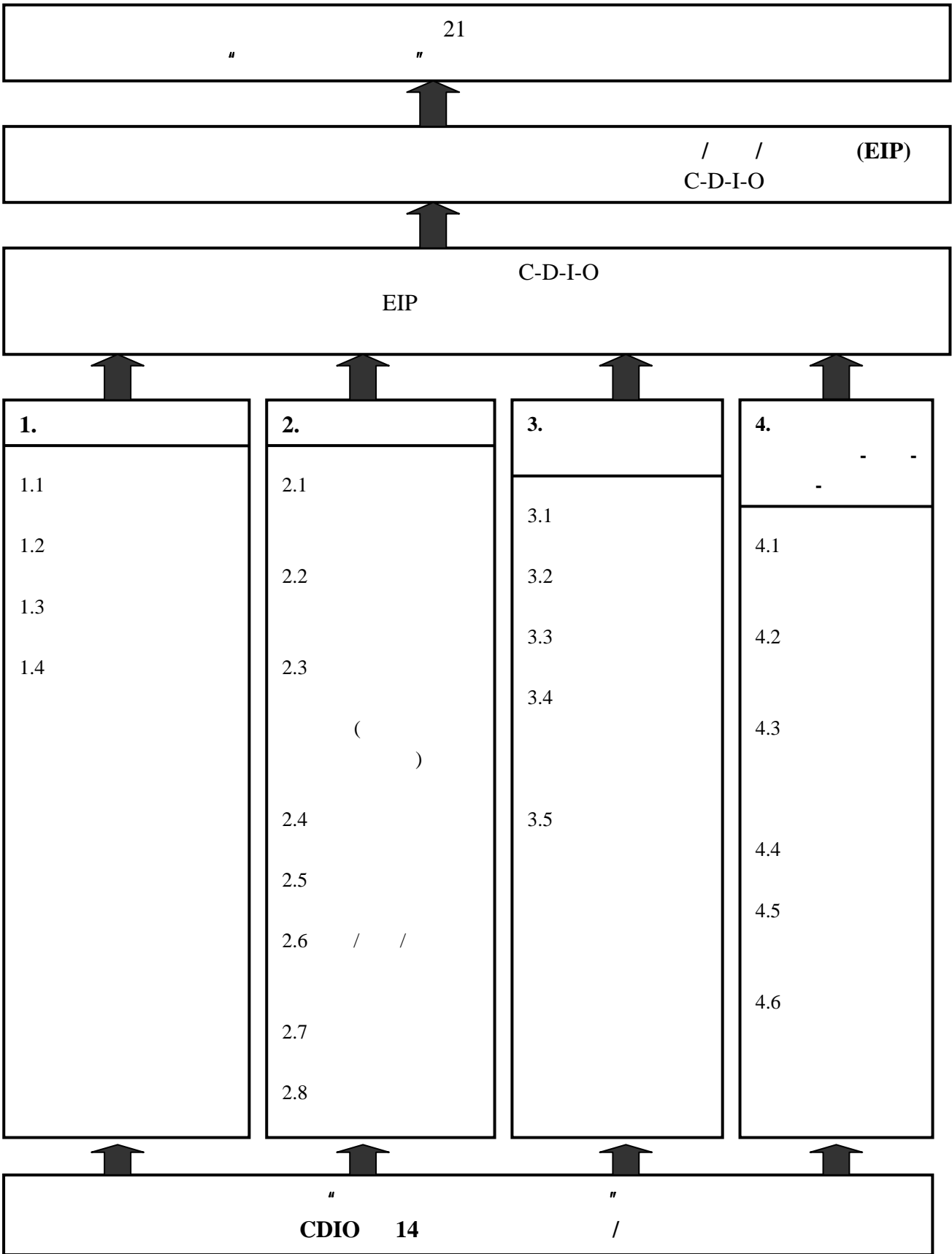
C-D-I-O

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**1.**

1.1

1.2

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**2.**

2.1

2.2

2.3

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**3.**

3.1

3.2

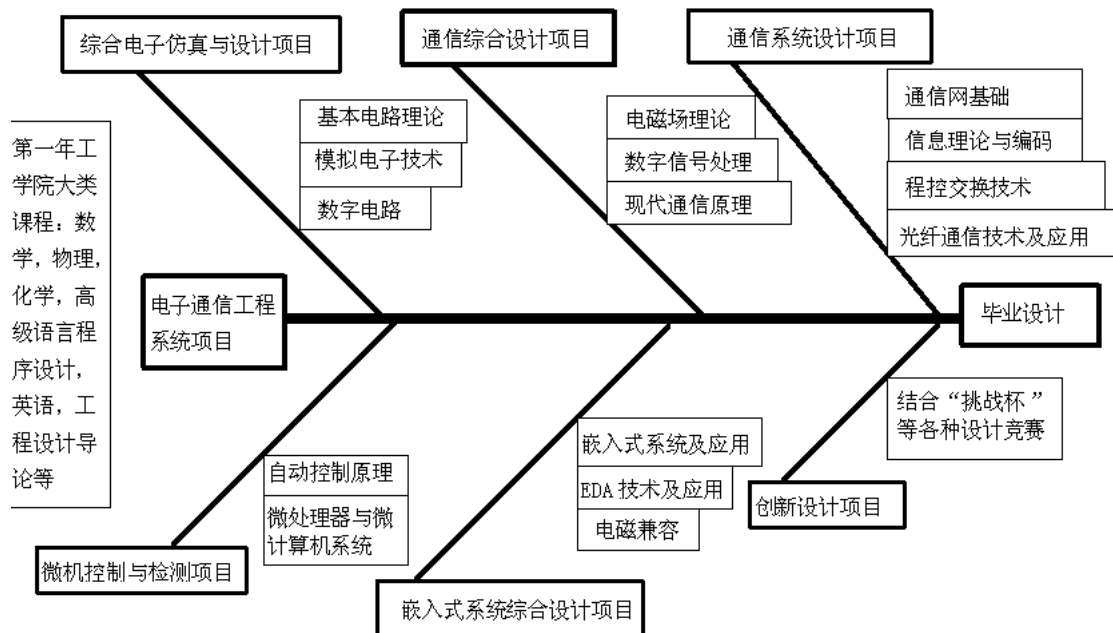
3.3

**4.**

4.4

4.5

4.6



通信工程专业核心课程培养结构示意图

1)	53		ELC4
2)	28		
3)	67	4	10
4)	162		

注：(1) 带五角星（☆）的课程为综合本专业核心专业领域的 1 级综合项目，1 级项目为本专业的核心骨架，必须按照给定的时间选修；

(2) 带双五角星 (☆☆) 的课程为 2 级综合项目, 2 级项目带领一组相关课程并有可能跨学期, 选课时必须考虑相关课程的选修以及时间顺序。

<b>1</b>	<b>9 28</b>		EEG9001		2
MAT1110		6	EEG7001 7005		5
MAT1210		6	EEG7200		1
MAT1130		2	EEG7300		10
( MAT1110)					
MAT1240		3	<b>4</b>	<b>4</b>	
( MAT1210)			ENC8000		1
PHY1030		4	EEG8010		1
PHY1000		2	EEG8020		1
ENC9101		1	EEG8030		1
ENC9103 C		3	CCE8010		1
ENC9301		1	CCE8020		1
			<b>5</b>	<b>10</b>	
	<b>(7 26.5 )</b>				
MAT1230		2	EEG9350 DSP		2
EEG9100		4.5	EEG9010		2
EEG9110		4.5	CCE9001		2
EEG9210		4.5	CCE9002		2
EEG9220		3.5	CCE9003		2
EEG9230		4	CCE9004		2
CCE9310		3.5	CCE9005		2
			CCE9006		2
	<b>12 40.5</b>		CCE9007		2
EEG9240		4	CCE9008		2
EEG9250		3	CCE9009		2
EEG9310		3.5	CCE9010		2
EEG9320		2	CCE9011		2
EEG9330		3	CCE9012		2
EEG9340 EDA		2.5	CCE9013		2
EEG9370		2	CCE9014		2
CCE9320		2.5			

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通信工程专业卓越工程师培养计划的知识-能力-素质培养矩阵

		1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	4.1	4.2	4.3	4.4	4.5	4.6
		CD O										VB		C		DSP		
CD O		1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	4.1	4.2	4.3	4.4	4.5	4.6
	1							1	3	2	1			1				
	4										1	3						
	6	4					1	2	4	2	2		3	2	1			
OOM	2	1	1	1	1	2	2	1	1	1	2	2	1	1	1	1	2	1
MT1110	6	2	4	3	3	3	2	1	1	1	2	2	1	1	2	2	3	1
MT1130	2	2	3	3	3	3	1	1	1	1	1	1	1	1	1	2	2	1
ENC9110	1	1	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1
ENC9106	2	3	1	1	1	1	2	2	3	2	3	2	3	2	2	1	1	1
	<b>24</b>																	
	1							1	3	2	1			1				
	4										1	3						
MT1210	6	2	4	3	3	3	2	1	1	1	2	2	1	1	2	2	3	1
PHY1030	4	1	3	2	1	1	1				1		1		1	1	1	1
PHY1000	2	1	1	1	1	1	3				1		1		1	1	1	1
CST9910 C	2	1		1	1	1	1				1	1					3	
EEG9100	5	1	2	2	1		2	1	2	2	1	2	2	1	2		2	1
EEG9016	1	3	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	4
	<b>24</b>																	
	1	2		1				2	2	2	2	2						
	2																	
	<b>3</b>																	
	1							1	3	2	1			1				
	4										1	3						
MT1230	2	1																
Cornerstone	1	2						2	2	2								
EEG9110	4.5	2		3	2	2	1				1	1			1		1	2
EEG9210	4.5	2	1	3	2	2	3	1	2	2	2	2	2	1	2	2	3	2
EEG9320	2	2	3	3	3	2	3	1	1	1	2	2	1	1	3	2	3	3
EEG9017	2	2	1	3	2	3	3	1	2	2	2	2	2	1	2	3	3	2
	<b>21</b>																	
	1							1	3	2	1			1				
	4										1	3						
MT1240	3	1																
Cornerstone	1	2		1				2	2	2	2	2						
EEG9221	3	3	2	1	1	1				2	1	1			1			1
EEG9231	4	2	1	3	2	2	3	1	2	2	2	2	2	1	2	2	3	2
EEG9240	4	2		3	2	2	1				1	1			1		1	2
EEG9250	3	2					2	1	2	2	1	1	1	1	2		2	
	2	3																
	<b>22</b>																	
EEG8010	1	3	1	3	2	2	3	1	2	2	2	2	2	1	2	2	3	2
EEG8020	2		2	2	1		2	1	2	2	2	2	2	1	2		2	1
	2	3																
	<b>3</b>																	
ENC9301	1	3																
EEG9330	3	3	1	3	2	3	2	1	1	1	1	1	1	1	3	1	2	2
OOE9330	2	2					2	1	1	1	2	2	1	1	3		2	



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	— .....	<b>14</b>
1.	.....	15
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3.	.....	20
4.	.....	20
5.	.....	20
6.	.....	20
7.	.....	20
8.	.....	20
	— .....	<b>24</b>
	— .....	<b>28</b>
	—FIR .....	<b>29</b>
	—FIR — .....	<b>36</b>
	—FIR — .....	<b>26</b>
	—XX XX IIR .....	<b>26</b>
	—XX XX IIR — .....	<b>26</b>
	—XX XX IIR — .....	<b>26</b>



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(Digital Signal Processing)

DSP

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- 2.
3. FIR
4. IIR
5. DSP

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DSP

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	60%
	30%
	100%

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S. J. Orfanidis. Introduction to Signal Processing.

• Prentice-Hall

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1. A.V. Oppenheim

2

2.

3. MATLAB



\*

The application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers to the building, testing, operation, and maintenance of electrical/electronic(s) systems.	3	FIR IIR
The applications of physics or chemistry to electrical/electronic(s) circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry.	1	" "
The ability to analyse, design and implement control systems, instrumentation systems, communications systems, computer systems, or power systems.	3	FIR IIR
The ability to apply project management techniques to electrical/electronic(s) systems.	1	
The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical/electronic(s) systems.	3	FIR IIR

\*

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The application of electric circuits, computer programming, associated software, analog and digital electronics, voice and data communications, and the principles of telecommunications systems in the solution of telecommunications problems.	3	FIR IIR
The applications of physics to telecommunications systems in a rigorous mathematical environment at or above the level of algebra and trigonometry.	1	" "
The ability to analyze, design, and implement telecommunications systems.	3	FIR IIR
The ability to analyze and implement switching technologies, wide area networking technologies, and policy.	1	
The ability to manage, design, and plan wide area networks.	1	
The ability to utilize statistics/probability, transform methods, or applied differential equations in support of telecommunication systems and wide area networks.	3	FIR IIR



CDIO

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1	1.1		3	IIR FIR
			3	FIR
			2	
	1.2		3	
		DTFT DFT FFT	4	FIR
		FIR	4	FIR
		IIR	4	IIR
	1.3		2	
		FIR	2	FIR
		" "	2	DSP
			2	DSP
			1	DSP

<b>2</b>	<b>2.1</b>	2.1.1	3	
		2.1.2	3	
		2.1.3	3	
		2.1.5	3	
	<b>2.2</b>	2.2.2	2	
		2.2.4	3	
	<b>2.3</b>	2.3.1	2	
		2.3.3	3	
		2.3.4	3	
	<b>2.4</b>	2.4.2	2	
		2.4.4	3	
		2.4.6	2	
		2.4.7	2	
	<b>2.5</b>	2.5.1	3	
		2.5.3	1	
	<b>3</b>	<b>3.1</b>	3.1.1	2
3.1.2			2	
3.1.5			2	
<b>3.2</b>		3.2.3	3	
		3.2.4	2	
		3.2.5	3	
		3.2.6	2	
<b>3.3</b>		3.3.1	2	

<b>4</b>          <b>(CDIO)</b>	<b>4.1</b>				
	<b>4.2</b>				
	<b>4.3</b>	4.3.1		2	
		4.3.2		2	
		4.3.3		2	
	<b>4.4</b>	4.4.1		3	
		4.4.3		3	
		4.4.4		3	
	<b>4.5</b>	4.5.1		3	
		4.5.3		3	
		4.5.5		3	
	<b>4.6</b>	4.6.1		3	
		4.6.4		3	

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CDIO

1,2,3,4,5,6



	The course syllabus Why DSP is so important ? How to teach and learn?	1
	ADC DAC	3
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	SNR	

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<b>DSP</b>	DTMF	4
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		8

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2	FIR		4
3	XX XX IIR		4
			8

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## 2.2 CDIO

<b>1</b>	<b>1.1</b>		3	
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	<b>1.2</b>		3	
		DTFT DFT FFT	4	DFT FFT
	<b>1.3</b>		2	
<b>2</b>	<b>2.1</b>	2.1.1	3	
		2.1.3	3	
		2.1.5	3	
	<b>2.2</b>	2.2.2	2	
		2.2.4	3	DFT/FFT
	<b>2.3</b>	2.3.1	2	
		2.3.3	3	
		2.3.4	3	
	<b>2.4</b>	2.4.2	2	
		2.4.4	3	DFT/FFT
		2.4.6	2	
		2.4.7	2	
	<b>2.5</b>	2.5.1	3	

	3.1.1	2	3-5
	3.1.2		

3.4



4.



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5.

5.1



6.

6.1



6.2



6.3



6.4



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6.5



6.6



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7.1

7.1.1

7.1.2

7.2

7.2.1

7.2.1.1

7.2.1.2



7.2.2



7.3 ( )

7.3.1



7.3.2



7.3.3 ( )

7.4 ( )

7.4.1



7.4.2



7.4.3



7.4.5



7.5 ( Java Matlab Labview )

■ Matlab

8.

8.1



8.2

8.2.1



8.2.2



8.2.3



8.3

8.4

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8.4.1

8.4.2

9.

**10.**

10.1

10.2

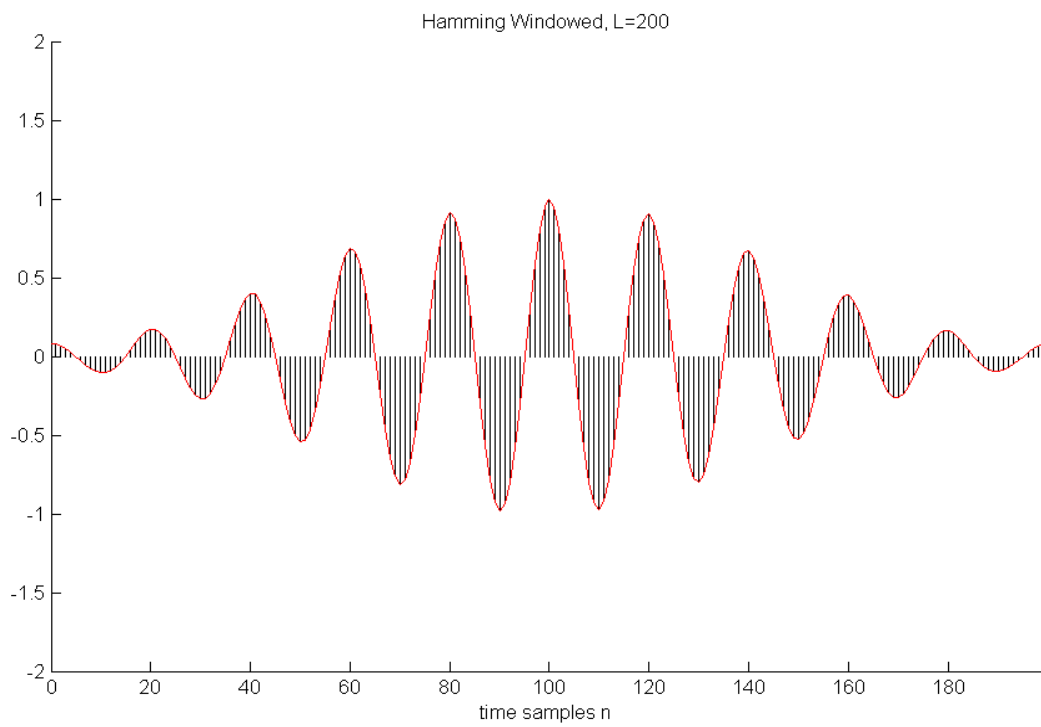
10.2.1

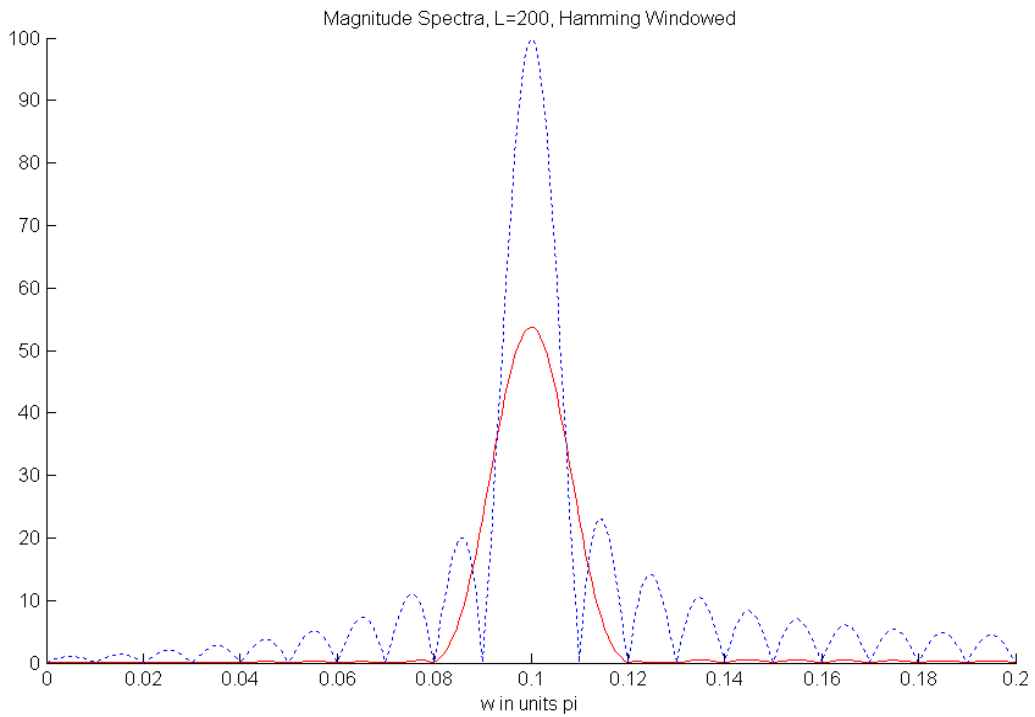
10.2.2

10.2.3

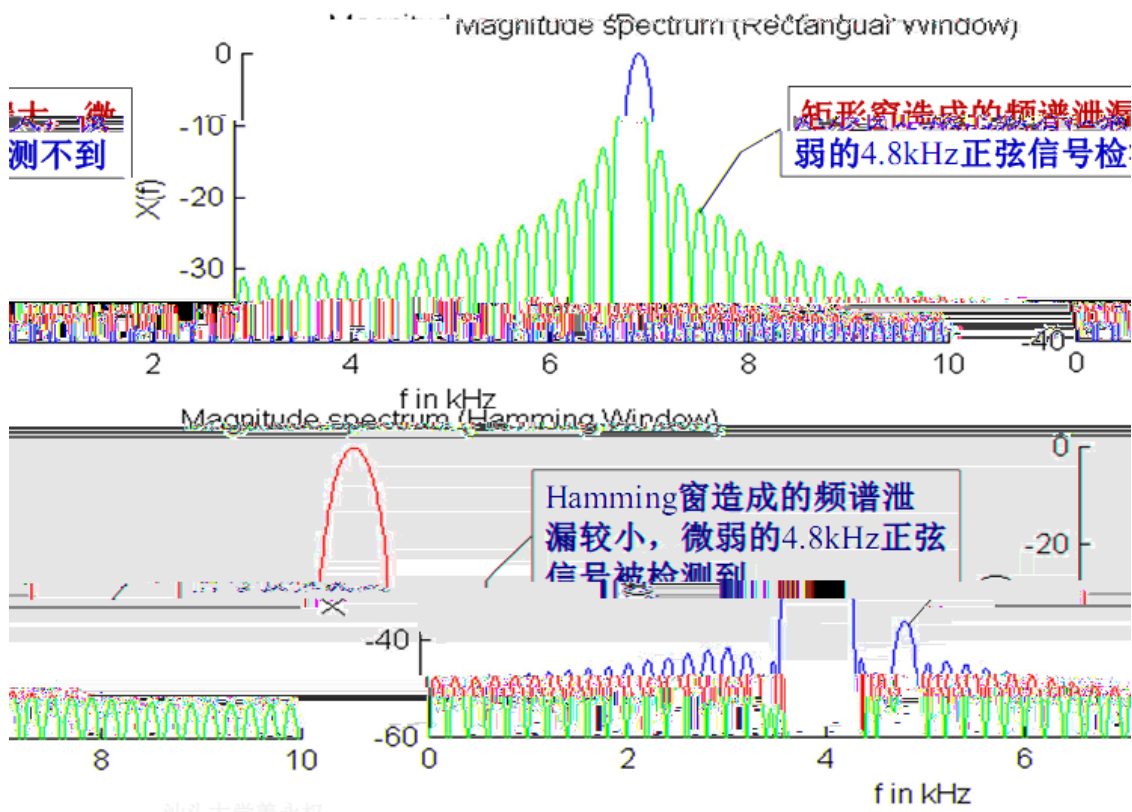
10.2.4

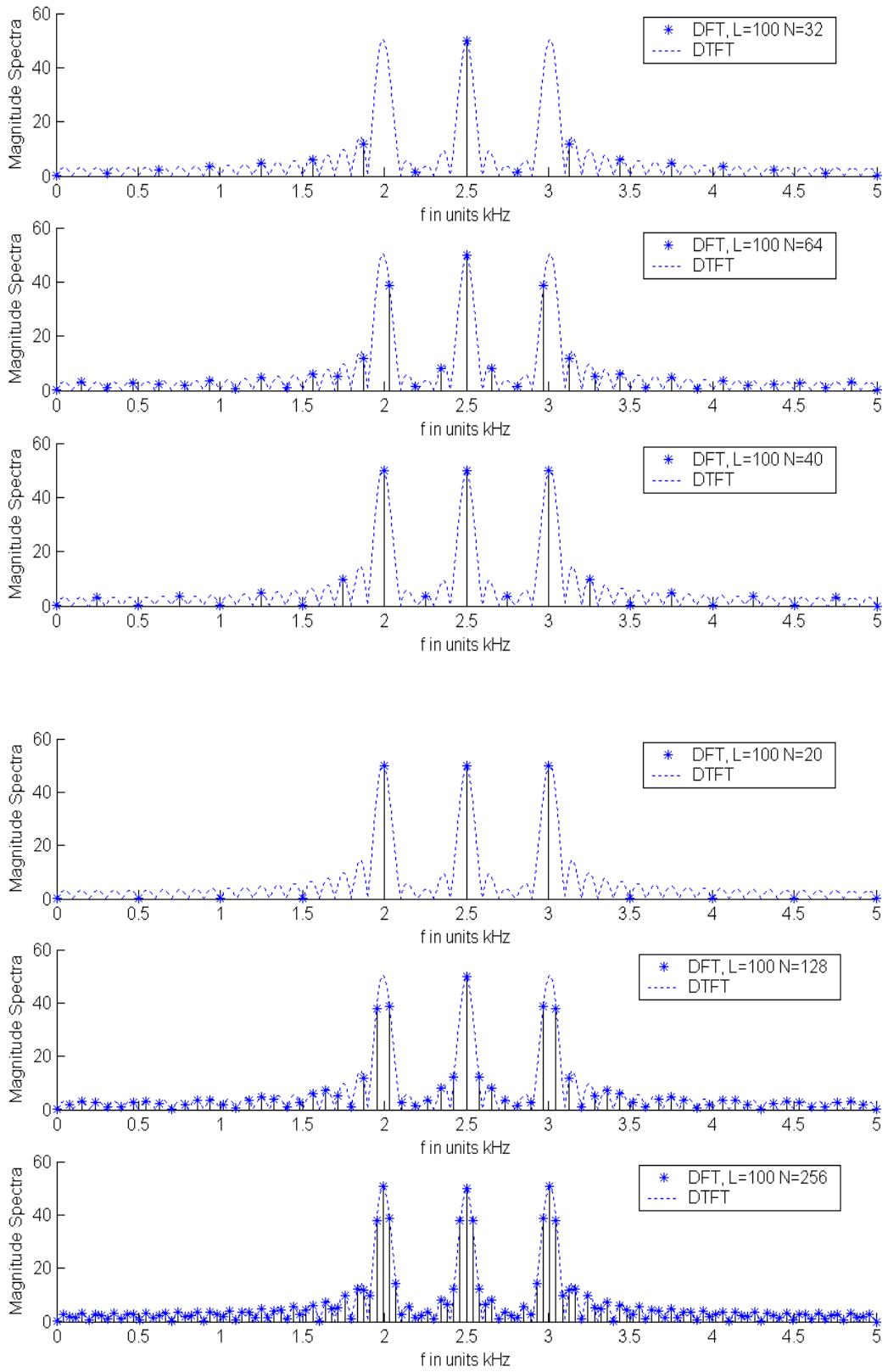
10.3





### 频谱泄露的危害：小幅度频率分量无法检测到





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电子工程系

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**2.1**

- CTFT





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3		0-10	
4	DFT FFT	0-15	
5		0-15	
6		0-15	
7		0-20	
8		0-5	
		0-100	



LP HP BP BS

2.1

Hamming

Hamming FIR

Hamming FIR

Kaiser

Kaiser FIR

Hamming

Hamming FIR

IO

<b>1.1</b>		3	
		3	FIR
<b>1.2</b>	IDTFT	4	
	IDFT	4	
<b>1.3</b>	Kaiser	3	Kaiser
<b>2.1</b>	2.1.1	3	
	2.1.3	3	
	2.1.5	3	Hamming FIR

**2.2**

2.2.2

2

		2.2.4	3	Hamming	FIR
	2.3	2.3.1	2		
		2.3.3	3	Kaiser	
		2.3.4	3		
	2.4	2.4.2	2		
		2.4.4	3		FIR
		2.4.6	2		
		2.4.7	2		
	2.5	2.5.1	3		
	3	3.1	3.1.1	2	3-5
3.1.2			2		
3.1.5			2		
3.2		3.2.3	3		
		3.2.4	3	PPT	
		3.2.5	3		
		3.2.6	2	2-3	10-15
3.3		3.3.1	1		
4		4.3	4.3.1	2	
	4.3.2		2		
	4.3.3		2		
	4.4	4.4.1	3		
		4.4.3	3		
	4.5	4.5.1	3		
4.5.3		3			
4.6	4.6.1	3			
	4.6.4	3	2-3	10-15	
(CDIO)					

				2-3
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3.

3.1

■ 3-5

3.2

■

3.3

■

3.4

■

4.

■ —FIR

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5.

5.1

■

6.

6.1

■

6.2

■

6.3

■

6.4

■ —FIR

—

6.5



6.6

7.

7.1

7.1.1

7.1.2

7.2

7.2.1

7.2.1.1

7.2.1.2



7.2.2



7.3 ( )

7.3.1



7.3.2



7.3.3 ( )

7.4 ( )

7.4.1



7.4.2



7.4.3



7.4.5



7.5 ( Java Matlab Labview )  
■ Matlab

8.

8.1

■

8.2

8.2.1

■

8.2.2

■

8.2.3

■

8.3

8.4 ( )

8.4.1

8.4.2

9.



**10.**

10.1

10.2

10.2.1

10.2.2

10.2.3

10.2.4

10.3

—FIR

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FIR

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电子工程系

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1

➤ FIR

➤

➤

2

FIR

2.1

**FIR**

➤

FIR

➤

➤

➤

Kaiser

Equation

2.2

**FIR**

➤

➤

➤

3

3.1

**FIR**

➤

LP HP BP BS

➤

2.1

➤

Hamming

➤

Hamming FIR

➤

Hamming FIR

➤

Kaiser

➤

Kaiser FIR

3.2

**FIR**

➤



Hamming



Hamming    FIR



4



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# —FIR

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⋮ \_\_\_\_\_  
 ⋮ \_\_\_\_\_

1		0-10	
2	FIR	0-10	
3	FIR	0-10	
4	FIR	0-15	
5	FIR	0-10	
6	FIR	0-20	
7	FIR	0-20	
8		0-5	
		0-100	

# —XX XX IIR

## 1.

### 1.1

IIR DSP IIR

### 1.2

IIR

### 1.3

IIR

### 1.4

IIR DSP IIR IIR IIR

### 1.5

#### 1)

Kaiser FIR FIR

#### 2)

Kaiser FIR

#### 3)

2-3 10-15

2-3

**2.**

**2.1**

- 1) XX XX IIR
- 2) XX
- 3) XX
- 4) XX
- 5) XX XX IIR
- 6) XX XX IIR
- 7)

**2.2 CDIO**

<b>1</b>	<b>1.1</b>		3	
			3	FIR
	<b>1.2</b>	IDTFT	4	
		IDFT	4	
	<b>1.3</b>	Kaiser	3	Kaiser
<b>2</b>	<b>2.1</b>	2.1.1	3	
		2.1.3	3	
		2.1.5	3	Hamming FIR
		2.2.2	2	
	<b>2.2</b>	2.2.4	3	Hamming FIR
		2.3.1	2	
	<b>2.3</b>	2.3.3	3	Kaiser



		2.3.4	3	
	<b>2.4</b>	2.4.2	2	
		2.4.4	3	FIR
		2.4.6	2	
		2.4.7	2	
	<b>2.5</b>	2.5.1	3	
<b>3</b>	<b>3.1</b>	3.1.1	2	3-5
		3.1.2	2	
		3.1.5	2	
	<b>3.2</b>	3.2.3	3	
		3.2.4	3	PPT
		3.2.5	3	
		3.2.6	2	2-3 10-15
	<b>3.3</b>	3.3.1	1	
	<b>4</b>  <b>(CDIO)</b>	<b>4.3</b>	4.3.1	2
4.3.2			2	
4.3.3			2	
<b>4.4</b>		4.4.1	3	
		4.4.3	3	
<b>4.5</b>		4.5.1	3	
		4.5.3	3	
<b>4.6</b>		4.6.1	3	
		4.6.4	3	2-3 10-15 2-3

3.

3.1

■ 3-5

3.2

■

3.3

■

3.4

■

4.

■ —XX XX IIR —

5.

5.1

■

6.

6.1

■

6.2

■

6.3

■

6.4

■ —XX XX IIR —

6.5

■

6.6

7.

7.1

7.1.1

7.1.2

7.2

7.2.1

7.2.1.1

7.2.1.2



7.2.2



7.3 ( )

7.3.1



7.3.2



7.3.3 ( )

7.4 ( )

7.4.1



7.4.2



7.4.3



7.4.5



7.5 ( Java Matlab Labview )

■ Matlab

**8.**

8.1



8.2

8.2.1



8.2.2



8.2.3



8.3

8.4

( )

8.4.1

8.4.2

**9.**

**10.**

10.1

10.2

10.2.1

10.2.2

10.2.3

10.2.4

10.3

—XX XX IIR

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XX XX IIR

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电子工程系

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1

➤ IIR

➤

➤

2 IIR

2.1

IIR

➤ IIR

➤

: s-plane z-plane

➤

➤

Equation

2.2 XX

➤ XX

➤ XX

➤ XX

➤

➤ XX XX IIR

3

➤ XX XX IIR

➤ 2.2 XX

➤ XX

➤ XX

➤ XX XX IIR

➤ XX XX IIR

➤



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—XX XX IIR  
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: \_\_\_\_\_

1		0-10	
2	IIR	0-10	
3	FIR	0-10	
4		0-15	
5		0-10	
6		0-40	
8		0-5	
		0-100	