

上海交通大学研究生课程开设申请表

New Graduate Course Application Form, SJTU

Basic Information				
* Course Name	Chinese English Intelligent mining of test data			
* Credits	2	* Teaching Hours	32 1 ≥16	
* Semester	Spring	* Cross-semester?	No	Spanning over Semesters
* Course Category	Specialized Course	* Course Type	For full-time students	
* Instruction Language	Chinese	Teaching Method	In class teaching	
* Grade	Letter grading	Exam Method	Essay	
* School				
Subject				
Person in charge	Name	ID	School	E-mail
				ycai@sjtu.edu.cn
Extended Information				
* () Course Description	200 Labview Python Labview Python /			
* English Course Description	<p style="text-align: center;">Digital collection and intelligent mining of processing data in materials preparation and processing are the basic knowledge that engineering students must master, and are the basic skills of scientific research and production practice in the future. This course provides students with systematic theoretical knowledge and practical operation guidance of signal acquisition and data mining. The specific teaching contents include basic concepts of measurement methods, basic</p>			

components of virtual instrument system, signal sensing, electrical signal data acquisition system and key parameters, as well as time domain analysis, frequency domain analysis, regression analysis and intelligent classification of measurement data. Through the course teaching and programming practice based on LabVIEW and python language, the learning and practice of knowledge points are completed. This course includes two parts: temperature measurement and stability analysis of hot working process. Through investigation, practice and discussion, it completes the construction of actual measurement system, the compilation of measurement program, the processing and analysis of measurement data, and trains students to master the basic virtual instrument test methods and data mining methods. Through the study of this course, students have the preliminary theoretical knowledge and practical ability of digital signal acquisition and intelligent data analysis and can complete simple LabVIEW or python programming tasks.

"Fundamentals of material processing and intelligent manufacturing" is suggested as prerequisite courses, but not compulsory.

* () Syllabus

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LabVIEW	2	
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	2	
	2	
1	2	
	2	
Python	2	
	2	
	2	
SVM	2	
	2	
	4	
2	2	

* English Syllabus

Content	Hours	Format
Course introduction: how to use virtual instrument and data mining technology to assist scientific research?	2	Classroom teaching
Basic knowledge of signal acquisition	2	Classroom teaching
System component and implementation of virtual instrument	2	Classroom teaching
Fundamentals of LabVIEW programming	2	Teaching, Practice
Multi signal sensing in hot working process	2	Teaching, Practice
Temperature signal acquisition in hot working process	2	Teaching, Practice

	<table border="1"> <tr> <td>Image signal acquisition in hot working process</td> <td>2</td> <td>Teaching, Practice</td> </tr> <tr> <td>Course design (1): perception system of hot working process</td> <td>2</td> <td>seminar</td> </tr> <tr> <td>Basic knowledge of intelligent data mining</td> <td>2</td> <td>Teaching, Practice</td> </tr> <tr> <td>Fundamentals of Python programming</td> <td>2</td> <td>Teaching, Practice</td> </tr> <tr> <td>How to classify test data? (cluster analysis)</td> <td>2</td> <td>Teaching, Practice</td> </tr> <tr> <td>How to establish the mapping between data and test results? (SVM modeling)</td> <td>2</td> <td>Teaching, Practice</td> </tr> <tr> <td>How to evaluate test results intelligently? (neural network)</td> <td>2</td> <td>Teaching, Practice</td> </tr> <tr> <td>Intelligent data mining case of hot working</td> <td>4</td> <td>Teaching, visiting</td> </tr> <tr> <td>Course design (2): intelligent system of hot working process</td> <td>2</td> <td>seminar</td> </tr> </table>	Image signal acquisition in hot working process	2	Teaching, Practice	Course design (1): perception system of hot working process	2	seminar	Basic knowledge of intelligent data mining	2	Teaching, Practice	Fundamentals of Python programming	2	Teaching, Practice	How to classify test data? (cluster analysis)	2	Teaching, Practice	How to establish the mapping between data and test results? (SVM modeling)	2	Teaching, Practice	How to evaluate test results intelligently? (neural network)	2	Teaching, Practice	Intelligent data mining case of hot working	4	Teaching, visiting	Course design (2): intelligent system of hot working process	2	seminar
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* Requirements	50																											
* English Requirements	<p>Students are required to attend all courses or practices on time, to finish class assignments and homework, and to carry out two course designs according to the teaching schedule. They should complete data testing and analysis through actual operation, and present it in written report or PPT.</p> <p>The specific assessment criteria are as follows: Usual performance 20% + homework 20% + course design 60%</p>																											
Resources	<p>2015 2010 2020 Sherin Thomas . PyTorch Python 2018</p>																											
English Resources	<p>Yuan Fuquan, et al. Modern virtual instrument measurement technology, electronic industry press, 2015 edition Shi Dequan et al. Measurement and control technology of hot working, Peking University Press, 2010 edition Sherin Thomas et al. Pytorch deep learning and practice, China Machine Press, 2020 Qi Wei. Python data analysis, electronic industry press, 2018</p>																											
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