

**INNOVATIVE TALENTS  
SCIENCE TRAINING  
PROGRAM**

**2025 SPRING QUARTER**

Here is to certify that Yan Zhao has attended the course: Robot Perception, Localization and Navigation from March 7th 2025 to June 1th 2025.

**OFFICIAL TRANSCRIPT**

Program	Professor	Class Period	Grade
Robot Perception, Localization and Navigation	Sen Wang	03/07/2025~06/01/2025	3.00

The curriculum design of the course focuses on drawing lessons from the educational concepts of both General Education and Research-Based Learning of world-class universities.

*Sen Wang*

Professor: Sen Wang

GRADE	EQUIVALENT PERCENTAGES	GRADE	EQUIVALENT PERCENTAGES
A+	90-100	C+	67-69
A	85-89	C	63-66
A-	80-84	C-	60-62
B+	77-79	D+	57-59
B	73-76	D	53-56
B-	70-72	D-	50-52

**Other Grading Information:** Nonacademic Credit=Attended, Audited.

For more information visit <https://student.neoscholar.com/#/passport/login> and go to the Course details-Grade page in the Classroom Section.

**Please note:** The course syllabus and outlines are strictly in consistent with professor's home institutions. All lectures and readings are in English and all students works are also performed in English. Academy consistency is therefore maintained in accordance with the academic requirements at their respective colleges.



**ISSUED TO:**

Name: Yan Zhao

Student ID: 3023006059\*

Class Period: 54 class hours

\*Transcript valid only if bearing the Professor's Signature.

**NEOSCHOLAR®**

Educated by the 1%, Be the 1%

[www.neoscholar.com](http://www.neoscholar.com)

# Robot Perception, Localization and Navigation

2025 .ITSTP

## Basic Information

Course Title	Robot Perception, Localization and Navigation	
Instructor	Sen Wang, Senior Lecturer (Associate Professor) in Robotics and Autonomous Systems, Imperial College London	
Prerequisites	Undergraduate courses in Linear Algebra, control, or robotics are highly encouraged. Students should be familiar with programming (C++/Python/Matlab).	
Required Text & Tools	Reading materials will be assigned as the course progresses.	
Grading Criteria	Exam: 50% Homework: 40% Class Participation: 10%	
Course Key Words	Computer Science , Robotics , Probabilistic Robotics , Sensor Fusion , State Estimation , Simulation , Kinematics , Robot Localization , Autonomous Navigation , SLAM , Robot Vision , Reinforcement Learning , Machine Learning , Robot Operating System (ROS)	

## Schedule

No.	Topics
Lecture 1	Overview of Robotics
Lecture 2	Robot Operating System (ROS)
Lecture 3	Robot Pose, Coordinates and Transformation
Lecture 4	Robot Kinematics and Motion
Lecture 5	Robot Sensing and Perception
Lecture 6	State Estimation and Multi-Sensor Fusion
Lecture 7	SLAM: Concepts and Applications
Lecture 8	Robot Vision
Lecture 9	Autonomous Navigation
Lecture 10	Robot Learning and Future Developments