

微波物理與應用(I) PHYS5370 (3 credits)  
Microwave Physics and Applications (I)

Professor: Tsun-Hsu Chang (張存續)

National Tsing Hua University,  
Department of Physics

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Microwave Physics and Applications (I)

**Textbook :**

David M. Pozar, Microwave Engineering, 3<sup>rd</sup> Edition (歐亞書局)

**References :**

- David K. Cheng, Field and Wave Electromagnetics, 2<sup>nd</sup> Edition.
- Robert E. Collin, Foundations for Microwave Engineering, 2<sup>nd</sup> Edition.
- 郭仁財教授翻譯中文版

**Time :** Thursdays (R6R7R8: 14:20–15:40 and 15:50–17:00)

**Classroom :** Physics Building R501

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# Teacher : Professor Tsun-Hsu Chang (張存續)

Office: Physics Building 417R (Ext. 42978)

Lab: Physics Building 119R (Ext. 42560)

Office hour: 13:00-14:20 (Thursday)

## Fields of Interest:

- Development of Terahertz Sources and Devices
- Microwave Physics and Applications
- Microwave/Materials Interaction

## Lecture Notes Download:

<http://www.phys.nthu.edu.tw/~thschang/MWPA.htm>  
or <http://www.phys.nthu.edu.tw/~hf5/>

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## Schedule (depending on the students' condition)

週次	時間	上課內容
一	02/18(四)	Introduction to MWPA Chap.1 + Chap. 2 Transmission Line Theory
二	02/25(四)	Chap. 2 Transmission Line Theory
三	03/03(四)	Chap. 2 Transmission Line Theory
四	03/10(四)	Chap. 3 Transmission Line and Waveguides
五	03/17(四)	Characteristics of Waveguide Modes and Their Applications
六	03/24(四)	Chap. 4 Microwave Network Analysis
七	03/31(四)	Chap. 4 Microwave Network Analysis
八	04/07(四)	Excitation of a Specific Waveguide Modes
九	04/14(四)	Chap. 5 Impedance Matching and Tuning
十	04/21(四)	Chap. 5 Impedance Matching and Tuning
十一	04/28(四)	Modal Analysis for Group Delay Study
十二	05/05(四)	Chap. 6 Microwave Resonators
十三	05/12(四)	Open Cavity: Introduction and Simulation
十四	05/19(四)	<b>Final oral presentation I</b>
十五	05/26(四)	<b>Final oral presentation II</b>
十六	06/02(四)	Chap. 9 Theory and Design of Ferrimagnetic Components
十七	06/09(四)	端午節 Dragon Boat Festival
十八	06/16(四)	Chap. 9 Theory and Design of Ferrimagnetic Components

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## How to evaluate students' performance?

- No mid-term and final exams.
- Oral presentation: Each one has 20 minutes, including 15 min presentation and 5 min question/answer period. The topic of your talk should be related to this course. You are free to choose any relevant topic.
- Grading policy: The final score will be normalized to reflect an average consistency with other courses. It depends on your oral presentation and participation.
- Active participation are highly encouraged.
- (final score) = (oral presentation)+ (class participation)

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## Others

- The contents of this course are designed for senior and graduate level students. Only passive devices are addressed.
- This book shows that microwave circuits and devices can be explained through the use of circuit theory, Maxwell's equations, and related concepts.
- If you have any question, do not hesitate to raise your hand.
- Any comment on improving the pedagogy is more than welcome and is highly appreciated.

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