

# Magnetic Resonance Imaging: Fall 2023

## ***Time and Location:***

Tuesday AM 9:10~12:00 @ EC8037

## ***Instructor:***

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## ***Textbooks/References:***

1. 自編投影片
2. “Handbook of MRI Pulse Sequences”, Matt A. Bernstein, Kevin F. King, and Xiaohong Joe Zhou, Elsevier Academic Press, 2004
3. “Magnetic Resonance Imaging: Physical Principles and Sequence Design”, E. Mark Haacke, Robert W. Brown, Y.-C. Norman Cheng, Michael R. Thompson, and Ramesh Venkatesan, John Wiley & Sons, 2014 (2<sup>nd</sup> edition)
4. “MRI in Practice”, Catherine Westbrook and John Talbot, John Wiley & Sons, 2018 (5<sup>th</sup> edition)

***Website:*** (Class notes and news are released here.)

[https://bmilab.ee.nsysu.edu.tw/lab/course\\_mri.html](https://bmilab.ee.nsysu.edu.tw/lab/course_mri.html)

請加入 Facebook 社團：「MRI farm@NSYSU」



## ***Schedule:***

9/5	Introduction
9/12	NMR physics
9/19	RF excitation and detection
9/26	Spatial encoding
10/3	Pulse sequence
10/10	放假 (國慶日)
10/17	Hardware
10/24	Image formation and k-space
10/31	Image quality and contrast
11/7	Midterm (Online topic: Bioeffects and safety)

11/14	Artifacts
11/21	Fast scan: echo-planar imaging
11/28	Fast scan: fast gradient echo
12/5	Fast scan: fast spin-echo
12/12	Fast scan: parallel imaging
12/19	Final
TBD	Lab tour (@高雄榮民總醫院放射線部)*

***Grading:***

Homework	30%
Lab*	10%
Midterm	30%
Final	30%

\*校外實驗時間預計於期中考後公告。