

Week 1	Morning		Afternoon		Night
29 May – 4 June 2023	8.30 - 10.00	10.30 - 12.00	13.30 - 15.00	15.30 - 17.00	18.30 - 20.00
Monday	Opening Session	M1	M1	M2	TM2
Tuesday	M3	M3	M4	M4	TM3-4
Wednesday	G1	G1	C1	C1	TG1
Thursday	Q11	Q11	Q12	Q12	TQ11-2
Friday	C2	C2	G2	G2	TC1-2
Saturday		Seminar 1 (IF)	Seminar 2 (QTFT)	Seminar 3	
Sunday	Free Day				

Week 2	Morning		Afternoon		Night
5 – 11 June 2023	8.30 - 10.00	10.30 - 12.00	13.30 - 15.00	15.30 - 17.00	18.30 - 20.00
Monday	FT1	FT1	FT2	FT2	TFT1-2
Tuesday	C3	C3	G3	G3	TG2
Wednesday	FT3	FT3	FT4	FT4	TFT3-4
Thursday	QI3	QI3	QI4	QI4	TQI3-4
Friday	G4	G4	C4	C4	TC3-4
Saturday		Seminar 4 (NARIT)	Seminar 5	Seminar 6	
Sunday	Free Day				

Maths	Seckson Sukhasena & Salvatore De Vincenzo & Sikarin Yoo-Kong
M1	Linear algebra (especially spectral, polar, and singular value decomposition)
M2	Fourier transform (including Dirac's delta function and its exponential representation)
M3-M4	Complex analysis (Cauchy theorem and residue, conformal mapping, branch cuts)
TM1	Tutorial for linear algebra
TM2	Tutorial for Fourier transform
TM3	Tutorial for complex analysis

GR and black holes**Pitayuth Wongjun & Chun-Hung Chen**

G1

From classical mechanics to special relativity, Minkowski spacetime

G2

Equivalent principle, tensor, parallel transport, curvature

G3

Energy momentum tensor, Einstein field equation

G4

Black hole solutions, singularity, spacetime diagram.

TG1

Exercise on vector calculus in Minkowski spacetime

TG2

Exercise on vector calculus in curved spacetime and geodesic equation.

Cosmology**Teeraparb Chantavat & Khamphée Karwan**

C1

Cosmological principle, Hubble's law, Friedmann's equation, Acceleration equation, Geometry of the universe

C2

Distance in cosmology, Evolution of different components of the universe,
different model of the universe, LambdaCDM model, CMB

C3

Inflationary universe + modified gravity

C4

Observational Cosmology, Correlation functions, Large-scale structure

Quantum information	Ninnat Dangniam & Sikarin Yoo-Kong
QI1	Information entropy, linear algebra
QI2	Qubit, quantum nonlocality
QI3	Density operator and entanglement measures
QI4	Generalized measurement, open quantum systems
TQI1-2	Tutorial for QI1 and QI2
TQI3-4	Tutorial for QI3 and QI4

Field theory	Pongwit Srisangyingcharoen & Pichet Vanichchamongjaroen
FT1	Lagrangian and Hamiltonian for systems of point particles
FT2	Classical free scalar field theory
FT3	Canonical quantisation of free scalar field
FT4	ϕ^4 theory
TFT 1-2	Tutorial for Field theory 1-2
TFT 3-4	Tutorial for Field theory 3-4