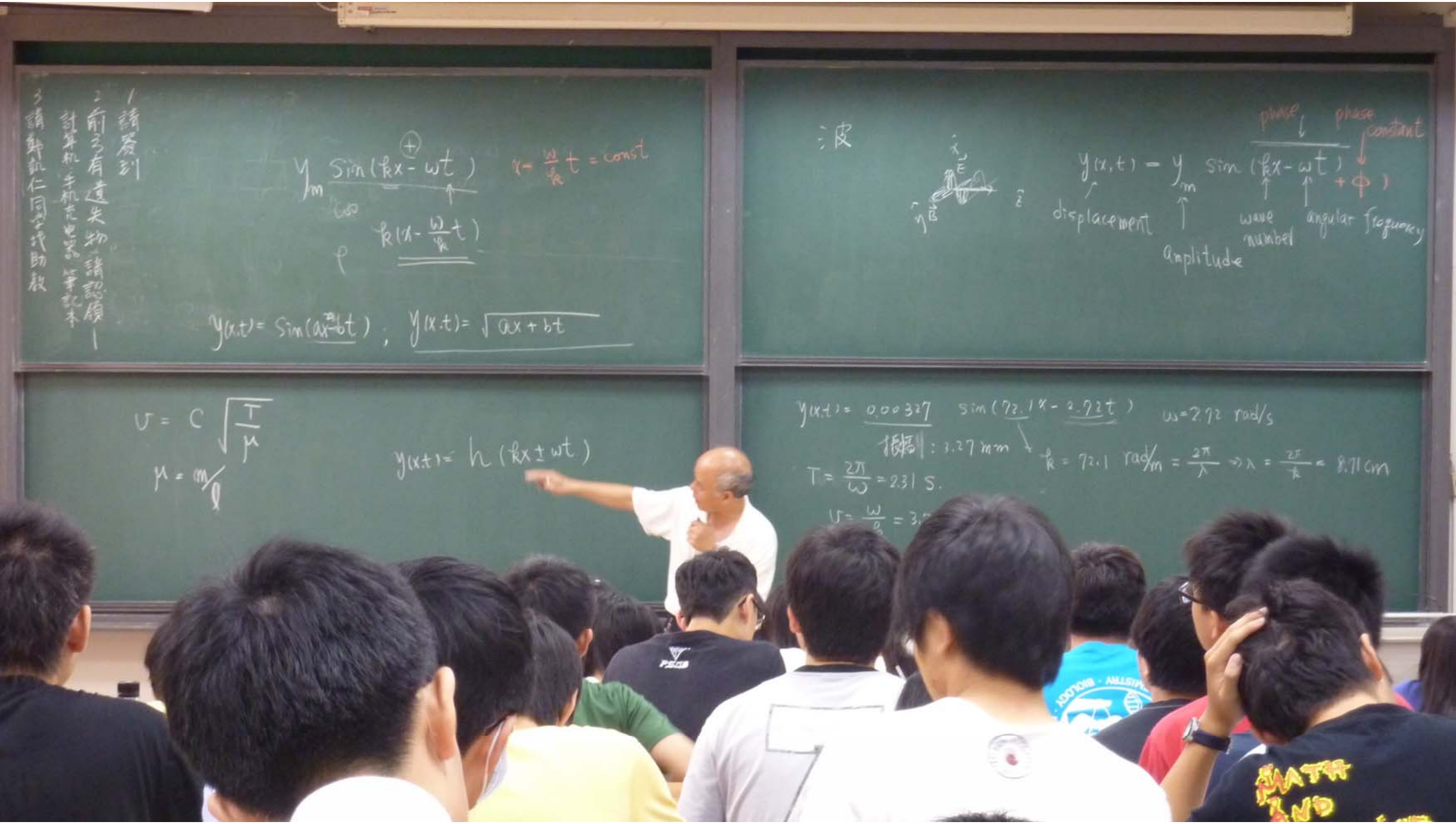
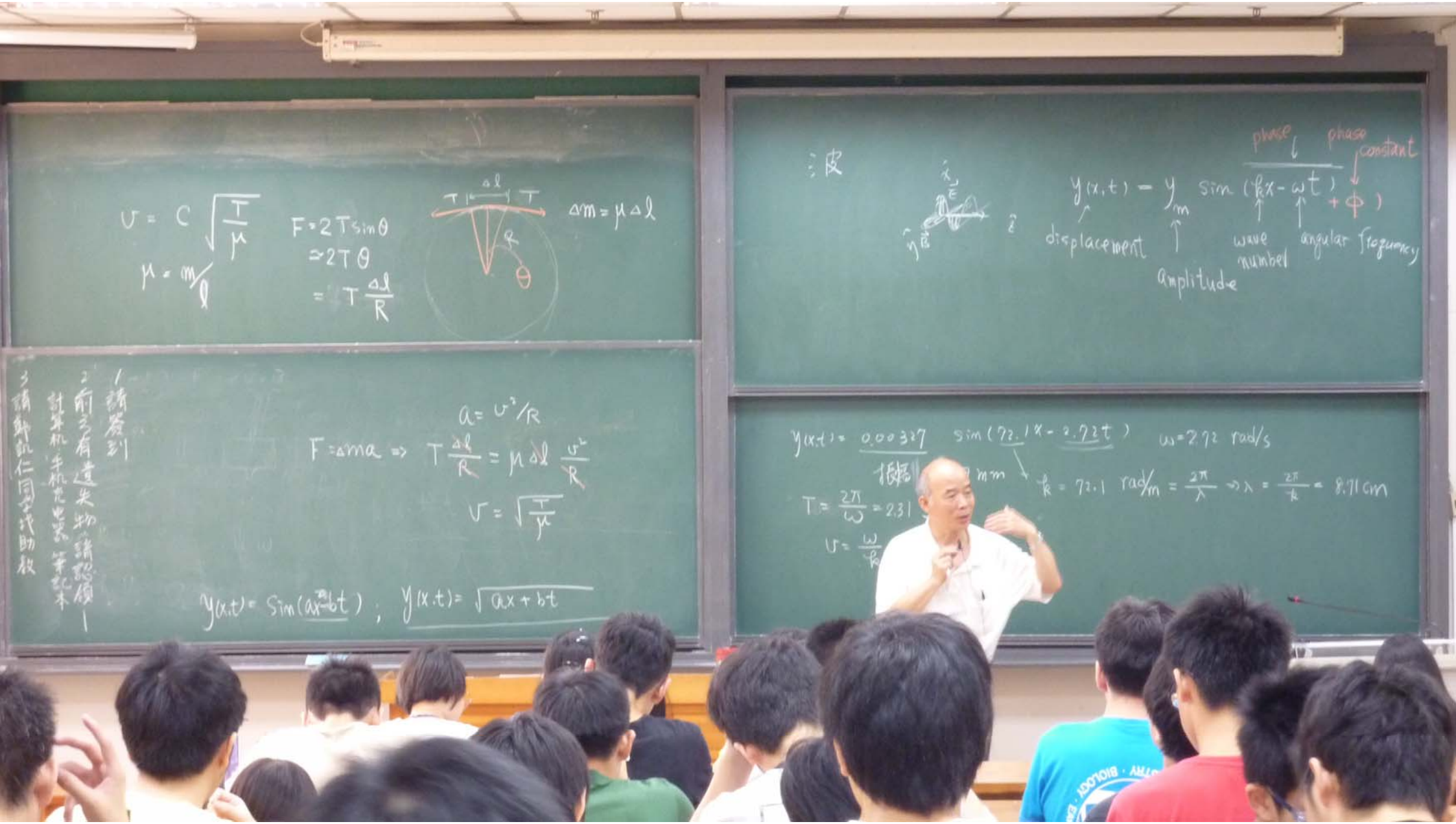
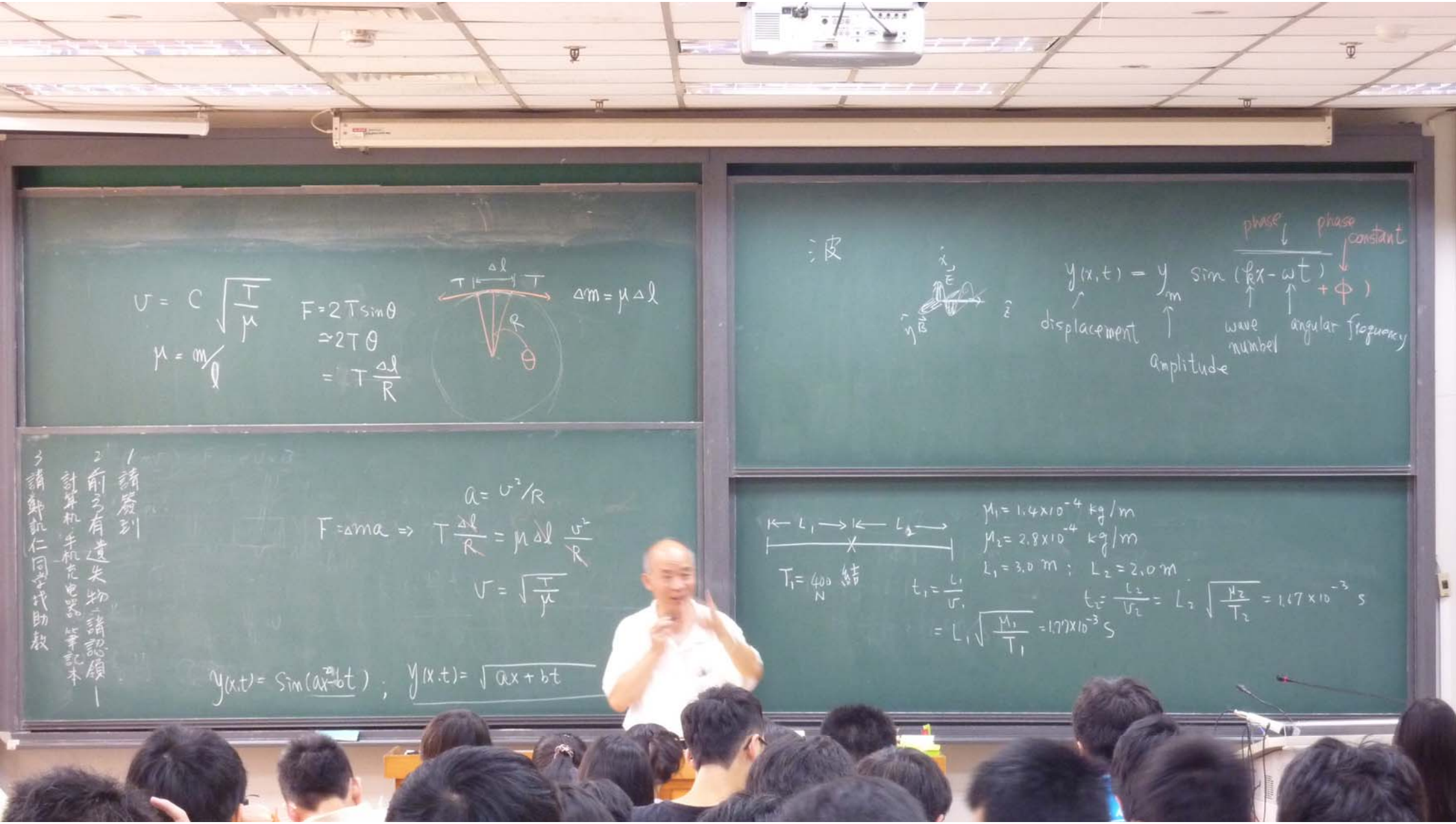
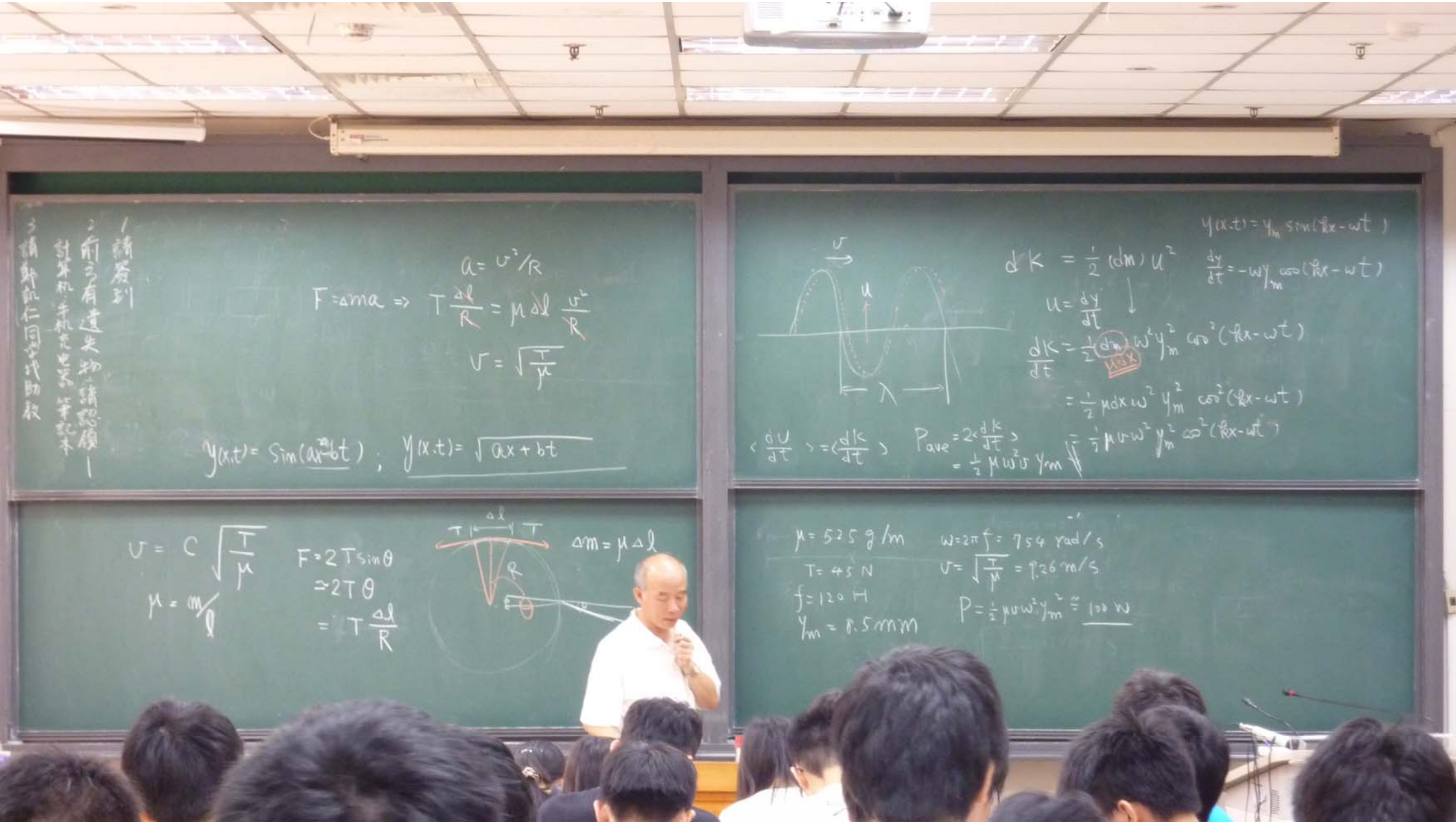
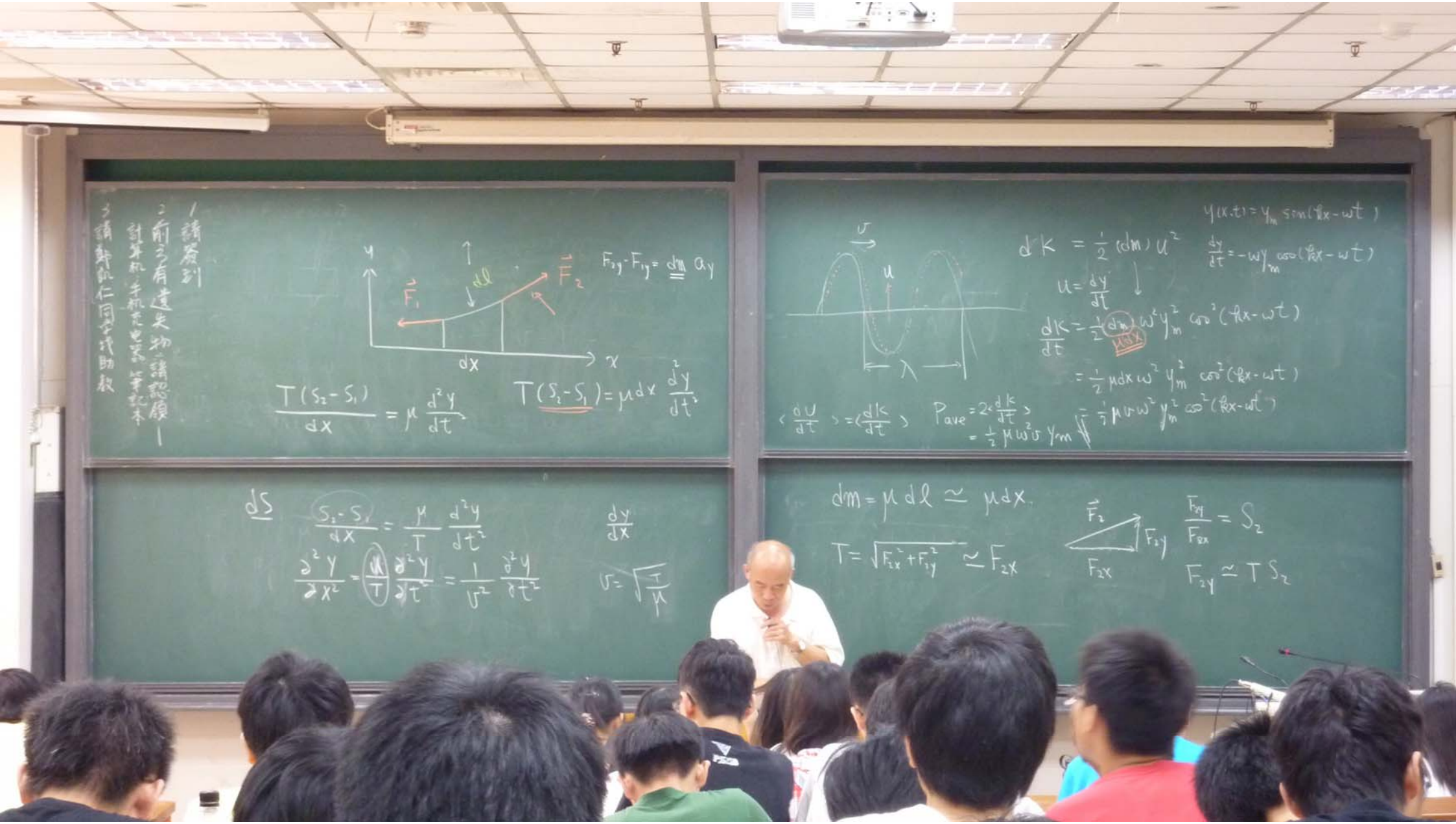

1 請簽到
2 前方有遺失物，請認領！
計算機、手機充電器、筆記本
3 請幫助仁同學找助教
$y_m \sin(kx - \omega t)$
$x = \frac{\omega}{k} t = \text{const}$
$k(x - \frac{\omega}{k} t)$
$y(x,t) = \sin(ax - bt)$; $y(x,t) = \sqrt{ax + bt}$
波
$y(x,t) = y_m \sin(kx - \omega t + \phi)$
displacement
amplitude
wave number
angular frequency
phase
phase constant
$v = C\sqrt{\frac{T}{\mu}}$
$\mu = m/l$
$y(x,t) = h(kx \pm \omega t)$
$y(x,t) = 0.00327 \sin(72.1x - 2.72t)$
$\omega = 2.72$ rad/s
振幅：3.27 mm
$k = 72.1$ rad/m $= \frac{2\pi}{\lambda} \Rightarrow \lambda = \frac{2\pi}{k} = 8.71$ cm
$T = \frac{2\pi}{\omega} = 2.31$ s.


v = C √(T/μ)
μ = m/l
F = 2T sinθ
≈ 2Tθ
= T Δl/R
Δm = μΔl
波
y(x,t) = y_m sin(kx − ωt + Φ)
displacement
amplitude
wave number
angular frequency
phase
phase constant
a = v²/R
F = Δma ⇒ T Δl/R = μΔl v²/R
v = √(T/μ)
y(x,t) = Sin(ax − bt) ; y(x,t) = √(ax + bt)
y(x,t) = 0.00327 sin(72.1x − 2.72t)
ω = 2.72 rad/s
k = 72.1 rad/m = 2π/λ ⇒ λ = 2π/k = 8.71 cm
T = 2π/ω = 2.31
v = ω/k


$v = C\sqrt{\frac{T}{\mu}}$
$\mu = m/l$
$F = 2T\sin\theta$
$\simeq 2T\theta$
$= T\frac{\Delta l}{R}$
$\Delta m = \mu \Delta l$
波
$y(x,t) = y_m \sin(kx - \omega t + \phi)$
displacement
amplitude
wave number
angular frequency
phase constant
$a = v^2/R$
$F = \Delta m a \Rightarrow T\frac{\Delta l}{R} = \mu \Delta l \frac{v^2}{R}$
$v = \sqrt{\frac{T}{\mu}}$
$y(x,t) = \sin(ax - bt)$; $y(x,t) = \sqrt{ax + bt}$
$\mu_1 = 1.4\times10^{-4}$ kg/m
$\mu_2 = 2.8\times10^{-4}$ kg/m
$L_1 = 3.0$ m ; $L_2 = 2.0$ m
$T_1 = 400$ N 結
$t_1 = \frac{L_1}{v_1} = L_1\sqrt{\frac{\mu_1}{T_1}} = 1.77\times10^{-3}$ s
$t_2 = \frac{L_2}{v_2} = L_2\sqrt{\frac{\mu_2}{T_2}} = 1.47\times10^{-3}$ s
1 請簽到
2 前3有遺失物 請認領
計算机 手机 充电器 筆記本
3 請執行同學找助教


1. 請簽到
2. 前3次有遺失物，請認領！計算機、手機充電器、筆記本
3. 請對號仁同學找助教
$a = v^2/R$
$F = \Delta m a \Rightarrow T\frac{\Delta l}{R} = \mu \Delta l \frac{v^2}{R}$
$v = \sqrt{\frac{T}{\mu}}$
$y(x,t) = \sin(ax - bt)$; $y(x,t) = \sqrt{ax + bt}$
$y(x,t) = y_m \sin(kx - \omega t)$
$dK = \frac{1}{2}(dm)u^2$
$u = \frac{dy}{dt}$
$\frac{dy}{dt} = -\omega y_m \cos(kx - \omega t)$
$\frac{dK}{dt} = \frac{1}{2}\frac{dm}{\mu dx}\omega^2 y_m^2 \cos^2(kx - \omega t)$
$= \frac{1}{2}\mu dx \omega^2 y_m^2 \cos^2(kx - \omega t)$
$= \frac{1}{2}\mu v \omega^2 y_m^2 \cos^2(kx - \omega t)$
$\left\langle \frac{dU}{dt} \right\rangle = \left\langle \frac{dK}{dt} \right\rangle$
$P_{ave} = 2\left\langle \frac{dK}{dt} \right\rangle = \frac{1}{2}\mu\omega^2 v y_m$
$v = C\sqrt{\frac{T}{\mu}}$
$\mu = m/l$
$F = 2T\sin\theta \simeq 2T\theta = T\frac{\Delta l}{R}$
$\Delta m = \mu \Delta l$
$\mu = 525\ g/m$
$T = 45\ N$
$f = 120\ Hz$
$y_m = 8.5\ mm$
$\omega = 2\pi f = 754\ rad/s$
$v = \sqrt{\frac{T}{\mu}} = 9.26\ m/s$
$P = \frac{1}{2}\mu v \omega^2 y_m^2 \simeq 100\ W$


1.請簽到
2.前方有遺失物請認領
3.請熄滅仁同室找助教
$F_{2y}-F_{1y}=dm\,a_y$
$\frac{T(S_2-S_1)}{dx}=\mu\frac{d^2y}{dt^2}$
$T(S_2-S_1)=\mu dx\frac{d^2y}{dt^2}$
$y(x,t)=y_m\sin(kx-\omega t)$
$\frac{dy}{dt}=-\omega y_m\cos(kx-\omega t)$
$dK=\frac{1}{2}(dm)u^2$
$u=\frac{dy}{dt}$
$\frac{dK}{dt}=\frac{1}{2}(\mu dx)\omega^2y_m^2\cos^2(kx-\omega t)$
$=\frac{1}{2}\mu dx\omega^2y_m^2\cos^2(kx-\omega t)$
$=\frac{1}{2}\mu v\omega^2y_m^2\cos^2(kx-\omega t)$
$\left\langle\frac{dU}{dt}\right\rangle=\left\langle\frac{dK}{dt}\right\rangle$
$P_{ave}=2\left\langle\frac{dK}{dt}\right\rangle$
$=\frac{1}{2}\mu\omega^2v\,y_m$
$\frac{S_2-S_1}{dx}=\frac{\mu}{T}\frac{d^2y}{dt^2}$
$\frac{dy}{dx}$
$\frac{\partial^2y}{\partial x^2}=\frac{\mu}{T}\frac{\partial^2y}{\partial t^2}=\frac{1}{v^2}\frac{\partial^2y}{\partial t^2}$
$v=\sqrt{\frac{T}{\mu}}$
$dm=\mu dl\simeq\mu dx$
$T=\sqrt{F_{2x}^2+F_{2y}^2}\simeq F_{2x}$
$\frac{F_{2y}}{F_{2x}}=S_2$
$F_{2y}\simeq TS_2$