

## Michigan Technological University

### Minor in Astrophysics

Program Code SPHA, Academic Year 2024-25

Department of Physics

Total Credits Required: 18

#### Required Courses: 5 credits

- PH 1600 Introductory Astronomy (2) *Prereqs: none*
- PH 2400 University Physics IV – Waves and Modern Physics (3) *Prereqs: PH2200 or PH2260*

#### Upper-level Elective Courses: minimum 9 credits

*Select at least two of the following three astrophysics courses*

- PH 4610 Stellar Astrophysics (3) *Prereqs: PH1600 and PH2400 and (MA3520 or MA3521 or MA3530 or MA3560)*
- PH 4620 Galactic Astrophysics (3) *Prereqs: PH1600 and PH2400 and (MA3520 or MA3521 or MA3530 or MA3560)*
- PH 4630 Particle Astrophysics (3) *Prereqs: PH2400 and (MA3520 or MA3521 or MA3530 or MA3560)*

*Select additional upper-level courses to bring total 3000-level or higher credits to 9*

- EE 3160 Signals and Systems (3) *Prereqs: (EE2110 or EE2112()) and (MA2320 or MA2321 or MA2330) and (MA3520 or MA3521 or MA3530 or MA3560)*
- EE 3190 Optical Sensing and Imaging (3) *Prereqs: MA3520 or MA3521 or MA3530 or MA3560*
- EE 4252 Digital Signal Processing and its Applications (4) *Prereqs: EE3160*
- MA 3710 Engineering Statistics\* (3) *Prereqs: MA2160 or MA3160*
- FW 4540 Remote Sensing of the Environment (3) *Prereqs: none*  
    **or** GE 4250 Fundamentals of Remote Sensing (3) *Prereqs: PH2200 and MA2160*
- PH 5640 Atmospheric Physics (3) *Prereqs: PH2300 and (MA3520 or MA3521 or MA3530 or MA3560)*

#### Other Elective Courses: Complete 4 credits to reach 18 credits overall

- PH 1500 Extraordinary Concepts in Physics (2)
- MA 2720 Statistical Methods\* (4) *Prereqs: MA1020 or MA1030 or MA1031 or MA1032 or MA1120*