# Summary Tables

Include here the summary tables of (1) needed capabilities and (2) time requirement. If you have multiple science goals, just create one summary table for the entire program.

#### Table 1: Needed Capabilities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Infrastructure | < 3m | 3-5m | 8m | 25m |
| Photometric Redshift Training | Support for photo-z development personnel. |  | <0.4->1μm, R>4000-5000 at red end, 5000-20000x multiplexing, >1 deg^2 FOV OR | <0.4->1μm, R>4000-5000 at red end, 2500-5000x multiplexing, ~1 deg^2 FOV OR | <0.4->1μm, R>4000-5000 at red end, 500-1000x multiplexing, >~0.1 deg^2 FOV |
| Photometric Redshift Calibration | Co-location of LSST data and DESI-like datasets |  | >500 sq. deg. Of overlap with DESI or DESI-like surveys spanning full LSST footprint |  |  |
| Weak Lensing (inc. intrinsic alignment studies) | Simultaneously processing LSST, WFIRST, & Euclid pixel level data: ~2x108 CPU-hours/data release |  | As for photometric-redshift training and/or calibration | As for photometric-redshift training and/or calibration | As for photometric-redshift training and/or calibration |
| Cluster studies: photo-z training and cross-checks, modified gravity and dark matter tests |  |  | As for photometric-redshift training, but ~500x multiplexing and ~0.1 deg2 FOV acceptable; dense packing of slits/fibers necessary | As for photometric-redshift training, but ~500x multiplexing and ~0.1 deg2 FOV acceptable; dense packing of slits/fibers necessary | As for photometric-redshift training |
| Strong lensing cosmography |  | Optical imaging to monitor time variation | Optical imaging to monitor time variation | 0.1” or better resolution imaging over 4” FOV; R ≈ 4000 – 5000 spectroscopy over a wavelength range of 1.0–2.2 with 0.2” or better resolution and 4” FOV | 0.1” or better resolution imaging over 4” FOV; R ≈ 4000 – 5000 spectroscopy over a wavelength range of 1.0–2.2 with 0.2” or better resolution and 4” FOV |
| Supernova studies via single-object spectroscopy | Transient brokers | High-throughput, broad-wavelength (~0.35-1μm minimum, 0.3-2.5μm goal) spectroscopy with R>100 | High-throughput, broad-wavelength (~0.35-1μm minimum, 0.3-2.5μm goal) spectroscopy with R>100 | High-throughput, broad-wavelength (~0.35-1μm minimum, 0.3-2.5μm goal) spectroscopy with R>100 | High-throughput, broad-wavelength (~0.35-1μm minimum, 0.3-2.5μm goal) spectroscopy with R>100 |
| Supernova studies via multi-object spectroscopy | Ability to add SN targets to spectroscopy focused on other science in near real-time |  | Multi-object spectrograph with broad wavelength coverage, wide field, and rapid redesign of observations | Multi-object spectrograph with broad wavelength coverage, wide field, and rapid redesign of observations | Multi-object spectrograph with broad wavelength coverage, wide field, and rapid redesign of observations |
| Supernova host redshifts |  |  | <0.4-1+μm, R>4000-5000 at red end, ~5000x multiplexing, >1 deg^2 FOV | <0.4-1+μm, R>4000-5000 at red end, 2500-5000x multiplexing, ~1 deg^2 FOV |  |

#### Table 2: Resource Demand

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Infrastructure | < 3m | 3-5m | 8m | 25m |
| Photometric Redshift Training |  |  | ~5 years (inc. weather loss) with DESI-like spectrograh OR | ~1 year (inc. weather loss) with PFS-like spectrograph OR | ~5 months (inc. weather loss) with best-case instrumentation |
| Photometric Redshift Calibration |  |  | Currently planned DESI & 4MOST BAO surveys |  |  |
| Weak Lensing (inc. intrinsic alignment studies) |  |  | See photo-z training & calibration (may require additional time) | See photo-z training & calibration (may require additional time) | See photo-z training & calibration (may require additional time) |
| Cluster studies: photo-z training and cross-checks, modified gravity and dark matter tests |  |  |  | ~100-1000 hours | ~100 hours |
| Strong lensing cosmography |  | 0-4000 hours over 5 years | 0-4000 hours over 5 years | ~30 hours of imaging and ~100 hours of spectroscopy over 5 years (split between 8+ and 25+m telescopes) | ~30 hours of imaging and ~100 hours of spectroscopy over 5 years (split between 8+ and 25+m telescopes) |
| Supernova studies via single-object spectroscopy |  |  | 60-180 nights over 10 years (inc. weather losses) | 180-540 nights over 10 years (inc. weather losses) | 60-180 nights over 10 years (inc. weather losses) |
| Supernova studies via multi-object spectroscopy |  |  | Set by observations being piggy-backed on | Set by observations being piggy-backed on | Set by observations being piggy-backed on |
| Supernova host redshifts |  |  | 15-30 nights per year OR | 15-30 nights per year |  |