

## Calendar

This calendar represents my best guess, in advance, of the order and duration of topics covered in the course. Keep in mind that this is only a guess and that I will adjust timing to reflect what I see arising in the course as we proceed.

MONDAY	WEDNESDAY	FRIDAY
Feb 1st <span style="float: right;"><b>1</b></span> First Class: Overview of course; What is GR? Logistics	3rd <span style="float: right;"><b>2</b></span> What is geometry?	5th <span style="float: right;"><b>3</b></span> Variational calculus (Lagrangian Mechanics)
8th <span style="float: right;"><b>4</b></span> Geometry of special relativity (SR)	10th <span style="float: right;"><b>5</b></span> SR effects	12th <span style="float: right;"><b>6</b></span> SR kinematics & four vectors
15th <span style="float: right;"><b>7</b></span> SR dynamics I	17th <span style="float: right;"><b>8</b></span> SR dynamics II <b>Drop/Add deadline</b>	19th <span style="float: right;"><b>9</b></span> Light
22nd <span style="float: right;"><b>10</b></span> Equivalence principle Gravitational time dilation	24th <span style="float: right;"><b>11</b></span> Time dilation as geometry	26th <span style="float: right;"><b>12</b></span> Particle motion in spacetime & variational calculus
29th <span style="float: right;"><b>13</b></span> Weak field metric & Newtonian gravity	Mar 2nd <span style="float: right;"><b>14</b></span> Measurement and coordinates	4th <span style="float: right;"><b>15</b></span> Local Inertial Frames (LIF), Vectors in curved geometry
7th <span style="float: right;"><b>16</b></span> Curved spacetime & geodesics	9th <span style="float: right;"><b>17</b></span> Geodesic equation	11th <span style="float: right;"><b>18</b></span> Solving the geodesic eqn, conservation & symmetry
14th <span style="float: right;"><b>19</b></span> Riemann normal coordinates, Central Forces	16th <span style="float: right;"><b>20</b></span> Schwarzschild energy & effective potential <b>In-class exam week</b>	18th <span style="float: right;"><b>21</b></span> Precession perihelion Mercury, deflection of starlight
21st <span style="float: right;"><b>22</b></span> <b>Spring break</b>	23rd <span style="float: right;"><b>23</b></span> <b>Spring break</b>	25th <span style="float: right;"><b>24</b></span> <b>Spring break</b>

MONDAY	WEDNESDAY	FRIDAY
28th <b>25</b> Schwarzschild Black Hole Light cones	30th <b>26</b> Event Horizons Rindler spacetime	Apr 1st <b>27</b> Kruskal-Szekeres Coords
4th <b>28</b> Vectors & dual vectors	6th <b>29</b> Vectors and tensor	8th <b>30</b> Tensor and covariant derivatives
11th <b>31</b> Curvature of surfaces	13th <b>32</b> Curvature in general & covariant derivatives	15th <b>33</b> Geodesic deviation
18th <b>34</b> Meaning of Einstein's equations (EEs) I	20th <b>35</b> Meaning of Einstein's equations II	22nd <b>36</b> Linearized Einstein's equations & gauge
25th <b>37</b> <b>Hal travels</b> Spherical symmetry and the EEs	27th <b>38</b> <b>Hal travels</b> Deriving the Schwarzschild metric	29th <b>39</b> <b>Hal travels</b> Astrophysical black holes & the event horizon telescope (EHT)
May 2nd <b>40</b> <b>Advising day</b> Make-up class?	4th <b>41</b> Gravitational wave polarizations	6th <b>42</b> Gravitational wave detection in general
9th <b>43</b> Solving gravitational wave equation	11th <b>44</b> Weak gravitational waves	13th <b>45</b> Gravitational wave detection: state of the art
16th <b>46</b> Quantum gravity	18th <b>47</b> Completion days	20th <b>48</b> Completion days <b>Take home due at 5pm</b>