

Applicant Name: \_\_\_\_\_

## Admission Content Preparation Review Worksheet - Physics Teacher Preparation Program

The New York State Education Department (NYSED) and the National Science Teachers Association (NSTA) have each articulated minimum requirements for the subject matter preparation of prospective secondary science teachers. Our graduate teacher preparation programs assume that this preparation has been achieved for the most part during your undergraduate work. Therefore, at admissions we need to perform a transcript review to determine whether you have already met all these subject matter requirements or, if that is not the case, what coursework and/or other experiences you would need to complete before graduation in order to meet these requirements.

While our faculty is ultimately responsible for this transcript review, we would like to give you first the opportunity to document that you have met most, or possibly all, of the subject matter requirements. Sometimes course titles and numbers alone (as they appear in official transcripts) may be deceiving. Having taken those courses, you are in the best position to know which courses should or should not “count” as coursework in physics or science more generally, as well as what specific content they covered.

Therefore, we are asking you to **complete Part A and Part B of this worksheet to the best of your ability and bring it with you to your admission interview**. Do not worry if you have questions about what specific topics really mean and/or where certain courses should be listed – you will have the opportunity to ask these questions at the interview and then modify/add to the worksheet as you wish. If needed, at the interview you will also be able to further explain how you completed the worksheet and/or to support your decisions with relevant documentation (e.g., course descriptions and syllabi of relevant courses, specific projects or assignments within a course, etc.).

This form includes three parts:

- Part A articulates the relevant New York State certification requirements in terms of subject matter coursework, and asks you to list information about all the courses you have taken in the subject matter(s) you are going to teach. This section of the worksheet will help the reviewer evaluate the extent to which you have already met these certification requirements.

- Part B articulates what your professional organization believes physics teachers should know about the subject matter they teach – that is, the specific areas within physics and science more generally with which you should be familiar by the time you begin teaching. In this case, we ask you to identify courses and other relevant experiences that contributed to your preparation in each particular area as well as your assessment of the strength of your preparation in that area at this point in time.
- Part C will be completed by the interviewer after your admission interview. Here the interviewer will record his/her final recommendations about what additional subject matter coursework and/or other experiences – if any – you will need to complete, if admitted, before you can be recommended for teaching certification.

**(A) New York State Requirements**

New York State requires teacher candidates seeking certification in Middle Childhood or Adolescence Education as specialists in physics to have completed at least 30 credits of coursework in the sciences, of which at least 18 credits should be in physics. Furthermore, the Warner School expects this coursework to have been completed with a GPA of 2.5 or above.

To help us evaluate the extent to which you have already met these requirements, please list in the table below all the college-level science courses (or equivalent) that you have already completed, or will have completed by the time you start the teacher preparation program, along with all the other information requested. Please also indicate coursework related to one or more of the following areas: biology (by putting “B” in the first column); chemistry (by putting “K” in the first column); physics (by putting “P” in the first column); and earth science (by putting “Z” in the first column). If you are not sure what a specific course should “count” for, put a question mark (?) in the first column.

**Undergraduate degree & major:** \_\_\_\_\_

**Institution:** \_\_\_\_\_

**Overall GPA:** \_\_\_\_\_



## **(B) Professional Organization Recommendations**

The National Science Teachers Association (NSTA) has identified a number of concepts, ideas and areas within physics and science more generally that physics teachers should be proficient in – as in order to effectively teach students this content, the first step is to make sure that the teacher understands it! These content standards have been identified in the first column of the table below.

For each of these areas, please indicate in the second column of the table which of the courses listed in Part A addressed this specific mathematical content; if there are experiences other than the courses listed in Part A that have contributed to your learning on this mathematical content, please indicate them in this column as well (e.g., using this content knowledge in other courses; teaching this content; independent reading/research; relevant high school courses; work experience, etc.).

Please note that content knowledge in each of the areas identified below is a graduation, not an admission, requirement. There will be some opportunities offered in your methods courses to deepen your content preparation in at least some areas – either through class activities or by selecting a specific focus in independent and/or group projects. Applicants choosing the M.A.T. option will be taking an additional 12 credits of graduate coursework in physics, which can be chosen to address some of the gaps identified in this transcript review; M.S. applicants can also be requested to take some additional content courses in conjunction with their program, when needed to address some critical gaps. In some cases, applicants may be simply required to complete some additional readings and/or projects in order to address gaps in content preparation identified in this transcript review. Therefore, do not worry if at this stage you need to leave some areas in the table blank.

Finally, in the third column we ask you to provide a self-evaluation of how confident you feel about your preparation in each of the areas identified as important by NCTS, using the following scale:

- 1:** Little to no knowledge of this content – *in which case additional coursework covering this content is likely to be required.*
- 2:** Content is relatively familiar – *in which case it is likely that additional readings and experiences in this area, but no additional coursework, will be required.*
- 3:** Sufficiently confident about this content.
- 4:** Very well versed in this content.

Competency requirements – unifying concepts	Relevant coursework or other experiences:	Self-rating	Interviewer's Comments & Rating
1. Multiple ways we organize our perceptions of the world and how systems organize the studies and knowledge of science			
2. Nature of scientific evidence and the use of models for explanation.	<i>(partially addressed in EDU434: Theory and Practice in Teaching &amp; Learning Science)</i>		
3. Measurement as a way of knowing and organizing observations of constancy and change.			
4. Evolution of natural systems and factors that result in evolution of equilibrium.			
5. Interrelationships of form, function, and behaviors in living and nonliving systems.			

**Self-rating scale:** **1:** Little to no knowledge of this content. **2:** Content is relatively familiar. **3:** Sufficiently confident about this content. **4:** Very well versed in this content.

Competency requirements – Physics core competencies	Relevant coursework or other experiences:	Self- rating	Interviewer’s Comments & Rating
1. Energy, work and power.			
2. motion, major forces, and momentum.			
3. Newtonian principles and laws including engineering applications.			
4. Conservation of mass, momentum, energy and charge.			
5. Physical properties of matter.			
6. Kinetic-molecular motion and atomic models.			

**Self-rating scale:** **1:** Little to no knowledge of this content. **2:** Content is relatively familiar. **3:** Sufficiently confident about this content. **4:** Very well versed in this content.

Competency requirements – Physics core competencies	Relevant coursework or other experiences:	Self- rating	Interviewer’s Comments & Rating
7. Radioactivity, nuclear reactors, fission, and fusion.			
8. Wave theory, sound, light, the electromagnetic spectrum, and optics.			
9. Electricity and magnetism.			
10. Fundamental processes of investigating in physics.			
11. Applications of physics in environmental quality and to personal and community health.			

**Self-rating scale:** **1:** Little to no knowledge of this content. **2:** Content is relatively familiar. **3:** Sufficiently confident about this content. **4:** Very well versed in this content.

Competency requirements – Physics advanced competencies	Relevant coursework or other experiences:	Self- rating	Interviewer’s Comments & Rating
12. Thermodynamics and relationships between energy and matter.			
13. Nuclear physics including matter-energy duality and reactivity.			
14. Angular rotation and momentum, centripetal forces, and vector analysis.			
15. Quantum Mechanics, space-time relationships, and special relativity.			
16. Models of nuclear and subatomic structures and behavior.			
17. Light behavior, including wave-particle duality and models.			

**Self-rating scale:** **1:** Little to no knowledge of this content. **2:** Content is relatively familiar. **3:** Sufficiently confident about this content. **4:** Very well versed in this content.

Competency requirements – Physics advanced competencies	Relevant coursework or other experiences:	Self- rating	Interviewer’s Comments & Rating
18. Electrical phenomena, including electric fields, vector analysis, energy, potential, capacitance, and inductance.			
19. Issues related to physics such as disposal of nuclear waste, light pollution, shielding communication systems, and weapon development.			
20. Historical development and cosmological perspectives in physics, including contributions of significant figures and underrepresented groups, and evolution of theories in physics.			
21. How to design, conduct, and report research in physics.			
22. Applications of physics and engineering in society, business, industry, and health fields.			

**Self-rating scale:** **1:** Little to no knowledge of this content. **2:** Content is relatively familiar. **3:** Sufficiently confident about this content. **4:** Very well versed in this content.

Competency requirements – Physics supporting competencies	Relevant coursework or other experiences:	Self-rating	Interviewer's Comments & Rating
23. Biology, including organization of matter and energy, electrochemistry, thermodynamics, and bonding.			
24. Chemistry, including organization of matter and energy, electrochemistry, thermodynamics, and bonding.			
25. Earth sciences or astronomy related to structure of the universe, energy, and interactions of matter.			
26. Mathematical and statistical concepts and skills including statistics and the use of differential equations and calculus.			

**Self-rating scale:** **1:** Little to no knowledge of this content. **2:** Content is relatively familiar. **3:** Sufficiently confident about this content. **4:** Very well versed in this content.

**( C ) Summary Evaluation -- TO BE COMPLETED LATER BY THE INTERVIEWER**

Based on the information and documentation you have provided, as well as the discussion that took place during the admission interview, the interviewer will determine which of the following categories apply to your situation:

\_\_\_ The applicant’s previous coursework and experiences meet and/or exceed all NYS and professional organization requirements. No additional experience is required.

\_\_\_ The applicant’s previous coursework and experiences, combined with the experiences that will take place as part of our teacher preparation program, will be sufficient to meet all NYS and professional organization minimum requirements by graduation. No additional coursework in the subject matter is required, although the candidate is recommended to do some independent work to strengthen his/her understanding of the following content areas:

---

---

---

\_\_\_ The applicant’s previous coursework and experience, combined with the experiences that will take place as part of our teacher preparation program, are not yet sufficient to meet all NYS and professional organization minimum requirements. The following additional coursework and experiences will need to be completed to meet these requirements:

---

---

---

---

---

---