

## **Scholars of Distinction: Science Program Overview**

### **Program Criteria**

Science, for purposes of the Minnesota Scholars of Distinction, is defined by the knowledge and skills that must be exhibited by the applicant. Scholars must have acquired a substantive base of scientific knowledge that reflects a broad and effective integration of scientific content and principles across several disciplines and be able to place science and technology within the contexts of society and history.

Each applicant is expected to effectively use scientific principles and methods to advance research in particular areas of science or to identify and address significant current issues confronting society.

### **Assessment Elements**

The assessment process will involve three reviewers from outside the student's school with science expertise, interest in science's impact on society or both. Reviewers will use the Scholars of Distinction in Science Rubric to evaluate evidence of the academic foundations of science the applicant has acquired and the rigor and impact of the project the scholar has undertaken. (See rubric at end of document.)

### **Project Specifics**

Applicants must submit a science project demonstrating scholarly excellence and personal experience with a substantive problem. View the Scholars of Distinction Important Dates document for the current award cycle timeline.

The project is to be submitted electronically in a format that is clearly organized. The content must include all of the following items:

#### **1. Personal Statement of one to two pages**

- Include a personal description of the importance of the area of science in terms of the scholar's past experience, present studies and future goals.
- Include a clear explanation of how and why the scholar chose the project problem and the research and actions taken to solve or make a significant effort toward a solution.
- Use a word processor and double space.

#### **2. Annotated K-12 Resume**

- Describe the pathways and experiences that have led the scholar to qualify as a Scholar of Distinction in Science.
- List the educational experiences that prepared the scholar for excellence in science, including specific coursework or training and independent studies.

- Identify the scholar's engagement with the science project and the development of skills and understanding.
- Use a word processor and follow a resume format.

### **3. Annotated bibliography and one page essay**

- Prepare an annotated bibliography with a substantial number of readings that provide depth and breadth to scholar's understanding of science.
- Reflect on the readings and prepare a one-page essay on how the readings influenced the project's intent and components.
- Use a word processor and follow a structured format.

### **4. Project Narrative**

Narrative will include:

- Dimensions of scientific pursuit and fundamental skills contributing to the scholar's development of expertise in science through one or more of the following:
  - A written paper exploring a current issue relating to science, technology and society that defines the issue, gathers and evaluates information related to the issue, arrives at a decision and recommends action.
  - A written paper exploring a current issue relating to science, technology and society that defines the issue, identifies its social implications and discusses the relationship to and impact of science and technology on the issue.
  - A research project that rigorously applies scientific inquiry and logical reasoning in a sophisticated manner to answer a specific question, test a well-defined hypothesis or solve a problem.

Narrative will demonstrate:

- Substantive base of scientific knowledge exceeding usual high school science requirements.
- Evidence that the student has conducted valid scientific investigation.
- Use of research methodology that includes clear and concise data analysis, precise scientific terms and critical thinking to synthesize information and argue the merits of conclusions.

Narrative will display:

- Introduction that identifies scholar's significant commitment to project as well as challenges and successes.
- Key project components are clearly organized and labeled.
- A review of personal growth as well as the project's impact on others.

- Support material used within narrative or referenced and used as addendum(s). Examples may include PowerPoint presentations, scanned photos, press notices, event programs and Web addresses that link the reviewer to student-prepared material.
- A self-evaluation and any project logs, journals or reports.
- Conclusion with recommendations for others seeking to replicate the project.

## 5. Optional Presentation(s)

- Document public presentation(s) to audience(s) outside classroom or school environment. Examples may include organizations with an interest or stake in the project, a civic group, peer education, etc. Documentation may include PowerPoint presentations, scripts, outlines, photos, programs and videos.
- Include evidence of feedback, review or evaluation and personal reflection.

## 6. Testimonials

- Identify two individuals familiar with the scholar's research and actions related to the project.
- Obtain permission and submit the individual's name, position/title, telephone number and a sentence on why each person was identified.
- Contact may be made with these individuals at the discretion of the reviewers.

## Consultants

Consultation regarding program expectations and the criteria used to judge projects as provided in the rubrics is available on request. Science project consultants are available through the Minnesota Academy of Sciences by [contacting Karen Newell](mailto:kmnewell@district287.org) at kmnewell@district287.org or (651) 653-0490.

## Submission Process

1. Complete the [Intent to Apply](#).
2. View the Scholars of Distinction [Important Dates](#) document for the current award cycle timeline.
3. Students are required to arrange for an official, sealed high school transcript to be sent directly to [scholarsofdistinction.MDE@state.mn.us](mailto:scholarsofdistinction.MDE@state.mn.us) or

Minnesota Department of Education  
 Attn: Wendy Behrens  
 1500 Hwy 36 West  
 Roseville, MN 55113

Transcript must be a certified copy sent directly from the applicant's school and must be received by the project deadline.

4. If a transcript is not available contact, [scholarsofdistinction.MDE@state.mn.us](mailto:scholarsofdistinction.MDE@state.mn.us) regarding alternative evidence demonstrating required knowledge base.

5. Complete the elements listed under “Project Specifics”, clearly label documents and send in PDF format to [scholarsofdistinction.MDE@state.mn.us](mailto:scholarsofdistinction.MDE@state.mn.us). Zip files, Google documents and redirection and downloads to other sites will not be accepted.

**Scholars of Distinction Science Scoring Rubric** follows this document.

## Rubric for Evaluation of Applicants for the Minnesota Scholars of Distinction in Science

Criterion	Components reflect a level of <b>DISTINCTION</b>	Components reflect a level of <b>HONORABLE MENTION</b>	Components reflect a level of <b>AVERAGE</b>	Components do not qualify
<p style="text-align: center;"><b>Personal Statement</b> (1 to 2 pages) <b>10 points</b></p>	<p><b>Clear and convincing articulation</b> of importance of science in terms of past experience, present studies and future goals.</p> <p>Scholar <b>clearly and strongly demonstrates</b> the development of skills over time. The work is <b>articulate</b> and shows a longstanding <b>commitment</b> to research in and application of scientific knowledge and skills.</p>	<p><b>Substantial</b> evidence of importance of science in terms of past experience, present studies and future goals.</p> <p>Scholar <b>clearly demonstrates</b> development of skills over time. The work is well-written, and shows a longstanding commitment to research in and application of scientific knowledge and skills.</p>	<p><b>Average and predictable</b> evidence of importance of science in terms of past experience, present studies and future goals.</p> <p>Scholar demonstrates the development of <b>some skills over time</b>. The work shows commitment to a weak or small research project.</p>	<p><b>Sketchy or undeveloped</b> overview of importance of science in terms of past experience, present studies and future goals.</p> <p>Scholar has <b>not demonstrated</b> the development of some skills over time. The work does not show commitment to researching the project or the skills to do so.</p>
<p style="text-align: center;"><b>Annotated K-12 Resume</b> <b>10 points</b></p>	<p>Resume reflects education and experiences that have led the student to <b>excel</b> in science research and application.</p> <p>Academic studies and activities have contributed to <b>significant growth</b> of scientific knowledge and skills.</p> <p>Resume preparation demonstrates <b>superior</b> quality for a high school student.</p>	<p>Resume reflects education and experiences that have led the student to <b>succeed</b> in science research and application.</p> <p>Academic studies and activities have contributed to <b>substantial growth</b> of scientific knowledge and skills.</p> <p>Resume preparation demonstrates <b>satisfactory</b> quality for a high school student.</p>	<p>Resume reflects education and experiences that have led the student to <b>engage</b> in science research and application.</p> <p>Academic studies and activities <b>have contributed</b> to scientific knowledge and skills.</p> <p>Resume preparation demonstrates <b>average</b> quality for a high school student.</p>	<p>Resume reflects education and experiences that have led to science research and application.</p> <p>Academic studies and activities have <b>limited</b> contribution to scientific knowledge and skills.</p> <p>Resume preparation demonstrates <b>poor</b> quality for a high school student.</p>

Criterion	Components reflect a level of <b>DISTINCTION</b>	Components reflect a level of <b>HONORABLE MENTION</b>	Components reflect a level of <b>AVERAGE</b>	Components do not qualify
<p align="center"><b>Annotated Bibliography and one page Essay</b></p> <p align="center"><b>10 points</b></p>	<p><b>Extensive</b> annotated bibliography of readings that support a broad and comprehensive study of project components.</p> <p>The <b>essay</b> shows a <b>superior understanding</b> of the impact the research has had on scholar and others.</p> <p>The writing reflects <b>superior</b> quality for a high school student.</p>	<p><b>Substantial</b> annotated bibliography of readings that show a broad and comprehensive study of project components.</p> <p>The <b>essay</b> shows a <b>positive understanding</b> of the impact the research has had on scholar and others.</p> <p>The writing reflects <b>high</b> quality for a high school student.</p>	<p><b>Average</b> annotated bibliography of readings that shows a limited study of project components.</p> <p>The <b>essay</b> shows <b>some understanding</b> of the impact the research has had on scholar and others.</p> <p>The writing reflects <b>average</b> quality for a high school student.</p>	<p><b>Undeveloped</b> annotated bibliography of readings that show a cursory study of project components.</p> <p>The <b>essay</b> shows a <b>weak connection</b> of the impact the research has had on scholar and others.</p> <p>The writing reflects <b>poor</b> quality for a high school student.</p>
<p align="center"><b>Project Narrative</b></p> <p align="center"><b>40 points</b></p> <p align="center"><b>+ 10 points</b></p> <p align="center"><b>if optional presentation is not included</b></p> <p align="center"><b>10 points</b></p> <p align="center"><b>+ 5 points</b></p> <p align="center"><b>if optional presentation is not included.</b></p>	<p><b>Significant evidence</b> presented that the scholar <b>knows and is able to use</b> key concepts and apply scientific methods, as identified in the Project Narrative component of the Project Specifics.</p> <p><b>Clear and convincing evidence</b> the scholar conducted a valid study including a <b>comprehensive and concise summary</b> of research and activities.</p> <p>A <b>superior</b> approach to the project over an <b>appropriate</b> period of time.</p> <p>An <b>innovative or creative</b> project approach, content and methodology.</p>	<p><b>Strong evidence</b> presented that the scholar <b>knows and is able to use</b> concepts and apply scientific methods as identified in the Project Narrative component of the Project Specifics.</p> <p><b>Substantial evidence</b> the scholar conducted a valid study including a <b>comprehensive and concise summary</b> of research and activities.</p> <p>A <b>valid</b> approach to the project problem over an <b>appropriate</b> period of time.</p> <p>An <b>innovative or creative</b> project approach, content and methodology.</p> <p><b>Relevant</b> information and materials were included and reliability was assessed.</p>	<p><b>Evidence</b> presented that the scholar <b>knows and is able to use</b> key concepts and apply scientific methods as identified in the Project Narrative component of the Project Specifics.</p> <p><b>Some evidence</b> of scholarly research and activities is provided and process is unclear.</p> <p>A <b>limited</b> approach to the project problem over a <b>short</b> period of time.</p> <p>A <b>narrow</b> project approach, content and methodology.</p> <p><b>Limited relevant</b> information and materials were included but reliability may be an issue.</p>	<p><b>Lack of evidence</b> that the scholar <b>knows and is able to use</b> key concepts and apply scientific methods as identified in the Project Narrative component of the Project Specifics.</p> <p>Evidence of research and activities provided were <b>not organized</b> to inform the reader.</p> <p>A <b>sketchy</b> approach to the project problem over a <b>short</b> period of time.</p> <p>An ordinary project approach, content and methodology.</p> <p>Relevance of information and supporting materials was <b>not apparent</b>.</p>

Criterion	Components reflect a level of <b>DISTINCTION</b>	Components reflect a level of <b>HONORABLE MENTION</b>	Components reflect a level of <b>AVERAGE</b>	Components do not qualify
<b>Project Narrative</b> (Continue 10 point value)	<p><b>Only relevant</b> information and supporting materials were included and reliability was assessed.</p> <p><b>Thoughtful reflection</b> on the process, future research and <b>recommendations</b> for others seeking to replicate are included.</p> <p>Organization and writing reflects <b>superior</b> quality for a high school student and precise language appropriate for the scientific community.</p>	<p><b>Reflection</b> on the process, future research and <b>recommendations</b> for others seeking to replicate are included.</p> <p>Organization and writing reflects <b>high</b> quality for a high school student and language is appropriate for the scientific community.</p>	<p><b>Limited reflection</b> and <b>recommendations</b> for others seeking to replicate the process are included.</p> <p>Organization and writing reflects <b>average</b> quality for a high school student and language is adequate for the scientific community.</p>	<p>Reflection and recommendations for others seeking to replicate were <b>not included</b>.</p> <p>Organization and writing reflects <b>poor</b> quality for a high school student and scientific purposes.</p>
<b>Optional Project Presentation</b> <b>15 points</b> or see <b>Project Narrative</b>	<p>Scholar made a <b>public presentation</b>, created a <b>strong method</b> to assess feedback received, and has <b>reflected</b> on the process with maturity and objectivity.</p>	<p>Scholar made a <b>public presentation</b>, created a <b>satisfactory method</b> to assess feedback received, and has <b>reflected</b> on the process with maturity and objectivity.</p>	<p>Scholar made a <b>public presentation</b>, created a <b>weak method</b> to assess feedback received. <b>Little reflection</b> on the process was evident.</p>	<p>Scholar made a <b>presentation</b> with limited feedback. <b>Little or no reflection</b> on the presentation was evident.</p>
<b>Testimonials</b> <b>5 points</b>	<p>Identification and contact information provided.</p>	<p>Identification and contact information provided.</p>	<p>Identification and contact information provided.</p>	<p>Identification and contact information provided.</p>

**Reviewer's Comments:**

**Level of Recommendation:**

\_\_\_\_\_ Project reflects a level of **DISTINCTION**

\_\_\_\_\_ Project reflects a level of **HONORABLE MENTION**

\_\_\_\_\_ Project reflects a level of **AVERAGE**

\_\_\_\_\_ Project does not qualify for recognition